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And Reports of Other Officers
1958-1959

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DUKE UNIVERSITY

REPORT OF THE PRESIDENT

And Reports of Other Officers

1958-1959

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REPORT OF THE PRESIDENT OF DUKE UNIVERSITY

REPORT OF THE PRESIDENT

We were in a healthy state of self-examination during the past year. The machinery for formal investigation of our needs, the Committee on Long Range Planning, was in operation throughout the period and received the aid of many members of the University community. Moreover, I observed with satisfaction a great deal of informal analysis and debate—and the University was the better for this general ferment as well.

At the level of seeking specific solutions, there has been a sense of urgency about the need to find the right answers. This is not to say that there has been impatience with the educational values we respect, merely a heightened insistence that comfortable assumptions must be tested and discarded when necessary. In short, then, we have been doing what we long have done informally, submitting ourselves to careful scrutiny. The difference lies in the organized effort, in the public avowal of our intention and in the resultant excitement of doing it.

Considerable time and thought were devoted to the general approach to our planning. The Committee was appointed and left to pursue its important work without hindrance. My own concern was with the attitude and the climate of opinion with regard to planning. In the President's Report to the Faculty in November, 1958 and in my address at Founders' Day in December this and related aspects of planning received attention.

I will not repeat here the substance of my comments. To summarize quickly, I was concerned about a number of facets of our planning: the fact that ours was a University-wide effort, dependent upon the wisdom and advice of each member of our faculty and staff; and that we were planning because all of us recognized the need for it, not as a result of any administrative fiat.

It seemed necessary to caution against provincialism in our self-study. The hazards of complacency must be avoided, as well as what I chose to call the "me too" approach: the imitative desire to find all the answers elsewhere, forgetting special strengths of our own institution. In the same vein the dangerous inertia of professionalism received some attention, as well as the persistence of educational myths.

It was my personal feeling that the undergraduate colleges deserved a central place in all our planning, but not with a view toward expansion. There seemed to be general agreement that our traditional policies would be respected, in particular our insistence upon developing strength at all levels before embarking upon a host of new projects. Yet it seemed important to concede the need for flexibility, for building up strength where it exists as well as correcting and vigorously seeking ways to overcome weaknesses.

At the February meeting of the Board of Trustees I called attention to the need for study of our administrative structure. Obviously, adequate machinery will be necessary for our long-range goals. Therefore, an analysis of our current operation and a projection of our needs is in order.

Meanwhile, throughout the year the Long Range Planning Committee and its various subcommittees accumulated data and departmental and individual reports and recommendations, seeking to sift the whole into a coherent analysis. Some of the subcommittees, especially those dealing with the difficult intangibles, required ample time for study, and their reports were deferred until the 1959-1960 year. However, in June of 1959 we received the First Progress Report of the central Committee on Long Range Planning. It was apparent at once that careful thought and honest effort had been applied to a difficult assignment.

Perhaps it will be useful to summarize briefly the Committee's approach. In the first place, the report was properly concerned with the heritage upon which we are all building and to which we owe so much: the spirit of free inquiry, the perennial concern with good teaching, the spiritual and moral tone that permeates the institution. The Committee offered succinct tribute to what I think of as the "practical idealism" of our predecessors.

Next, analysis was made of the "essential nature" of our responsibilities in education today, with some emphasis upon reminding us that the problems of 1924 cannot be the identical problems of today. But we were also cautioned to remember that our fundamental tasks, teaching and research, remain constant in the modern world.

In addition, the Committee tried to do what is always difficult for an educational institution: to find and use profitably criteria for arriving at a fair and well-rounded evaluation of ourselves. Four major sources of opinion were cited: our academic peers, students who seek admission, officials of major foundations and finally, "the interested and informed public." Then the Committee sought to apply such data as were available to each of our schools and colleges and to some other areas, in an attempt to see where we stand today.

Once this preliminary work was done, the Committee offered for our consideration a number of goals: The overriding priority was placed on higher salaries, with the greater emphasis upon salaries for the instructional staff. Second, a list of building projects was presented, in accord with a rough time schedule. Third, the report outlined in a general way goals for "enrichment" and for strengthening existing areas, as well as providing latitude for some new enterprises. It should be noted that in all of these categories the Committee made estimates for objectives that might be achieved within the next 10 years.

At its meeting of May 21, 1959 the Administrative Committee of the University discussed the report and agreed, without commitment on details, that our long-range needs are of the order of magnitude suggested.

The Committee lifted out for immediate attention certain items and recommended as follows to the Board of Trustees in June: *that* the Long Range Planning Committee be continued for another year to complete its work; *that* salary needs should receive first attention; *that* tuition should be increased in the amount of $200 beginning in September, 1960 (except in the Medical School where there has been a recent increase); and *that* an Office of Development be created to coordinate a permanent development program. In addition preliminary recommendations were made with regard to less extensive but urgent building projects such as the East Campus Infirmary and the West Campus Heating Plant. The Board of Trustees approved these recommendations. Finally the Committee and the Board reiterated an earlier decision that a new Law School building be constructed when funds are available.

The foregoing is simply an outline of the report and of the University's first reaction to it. Space does not permit an exhaustive treatment of the substance or the spirit of the report. It represented a clear, sympathetic and critical analysis of the University as a whole. It was only a first progress report, as its title indicated. Yet, it presented an over-all concept of the magnitude of the task that lies ahead. It would be difficult to exaggerate the importance of what has been done. This was the first report of its kind in the history of Duke University. The task set before us now is of immense proportions. But, it is no greater than the goals which have been set and which are being achieved by other great universities.

I believe the University's friends appreciated, as I did, the understanding and perceptive treatment of the early history of Duke University, beginning with James B. Duke's directive and continuing through the objectives set by President Few and his colleagues. It was an ambitious dream they had. They did not set out to build a provincial university, though they were in sympathy with the need to render special service to the South. These men understood the exacting demands in teaching, scholarship and research on a national basis.

The report properly respected and acknowledged what the University has accomplished to this date. It pointed with pride to the solid achievement in the undergraduate, graduate and professional areas. In some respects and in some areas the University has achieved national distinction. At the same time the report was realistic in appraising the extraordinary educational developments that have taken place in universities in the post war era. Universities are now more complex and the demands more pressing both as to the quality and the quantity of production. This presents the hard fact that Duke University cannot rest at this point without falling behind in the procession.

I hope I have conveyed my own enthusiasm for the prospects ahead. Obviously, as has been said before, this is a progress report. Decisions on items and priorities will have to be hammered out in future meetings of

the Long Range Planning Committee, the Administrative Committee of the University and the Board of Trustees. In fact the Administrative Committee has not directed its attention to items other than those recommended. But it is the scope, the direction, the emphasis, the dream that unite us. This is the most ambitious dream presented for the University since the dream which created it.

* * * * * * * * * *

Now I should like to deal briefly with some of the other highlights of the report period.

Commencement this year fell on Monday, June 8. Our speaker was Ralph E. McGill, editor of the Atlanta *Constitution* and a recent Pulitzer Prize winner. On Sunday, June 7 the Baccalaureate Sermon was preached by The Reverend James A. Jones, President of Union Theological Seminary, Richmond, Virginia.

Honorary degrees were conferred upon the following:

Edwin M. Gill Treasurer of North Carolina.	—Doctor of Laws.
Nolan B. Harmon Resident Bishop, South Carolina and Western North Carolina Conferences, Methodist Church.	—Doctor of Divinity.
Richard A. Harvill President of the University of Arizona.	—Doctor of Laws.
Hugh T. Lefler Kenan Professor of History, University of North Carolina.	—Doctor of Laws.
Benjamin L. Smith Superintendent Emeritus, Greensboro Public Schools.	—Doctor of Laws.

Vacancies in the membership of the Board of Trustees occasioned by death and resignation were filled during the year. By the end of the year we had a full Board of 36 members.

Newly-elected trustees were: Thomas A. Aldridge of New York City; Robert Wallace Bradshaw of Durham, N. C.; Robert Henry Pinnix of Gastonia, N. C.; Frank Odell Sherrill of Charlotte, N. C.; Thomas Fuller Southgate, Jr. of Winston-Salem, N. C.; and James Frederick Von Canon of Sanford, N. C.

Two members resigned during the year, Sidney S. Alderman of Washington, D. C., a member of the Board since 1934; and William J. Hobbs of Atlanta, Georgia, a member since 1947. There were two deaths: Frank Grainger Pierce of Charlotte, who had served on the Board since 1954, died on October 30, 1958. Bishop W. W. Peele,

Trustee Emeritus, died on July 1, 1959. He had been on the Board from 1921 until his retirement in 1958.

At the close of the year there were seven retirements among the faculty, almost all among men who had served the University for many years. Indeed, the average length of service of the group amounted to 29 years. Listed in order of seniority, the retirees were:

Eber Malcolm Carroll, James B. Duke Professor of History. He joined the staff in 1923.

Frederick Eliphaz Wilson, Associate Professor of German, and also a member of the faculty since 1923.

Lambert Armour Shears, Professor of German. He had been at Duke since 1927.

Warren Chase Vosburgh, Professor of Chemistry and member of the faculty since 1928.

John Saeger Bradway, Professor of Law and Director of the Legal Aid Clinic. He joined the faculty in 1931.

Howard Eikenberry Jensen, Professor of Sociology and also a member of the faculty since 1931.

Arley John Walton, Professor of Church Administration and Director of Field Work. He had been at Duke since 1948.

Several administrative appointments were made during the year. Dr. Marcus Hobbs, who became Dean of the University the previous year, was succeeded as Dean of the Graduate School of Arts and Sciences by Dr. Allan M. Cartter of the Department of Economics. Dr. Cartter joined the Duke faculty in 1952. The change-over in the Graduate School became effective September 1, 1959.

In the Divinity School, Dean James Cannon's failing health led him to offer his resignation in the Fall of 1958. He was succeeded by Dr. Robert E. Cushman, Professor of Systematic Theology and a member of the faculty since 1945.

The need for more administrative personnel in the medical school was partially met by two appointments: Dr. Joseph E. Markee, James B. Duke Professor of Anatomy and chairman, Committee on Admissions, was named Assistant Dean in Charge of Admissions; and Dr. William M. Nicholson, Professor of Medicine, was appointed Assistant Dean in Charge of Post Graduate Education. In unhappy anticipation of Dean W. C. Davison's retirement in 1961, a committee of the Medical Center was appointed to investigate and advise concerning a successor. The committee members are: Dr. Philip Handler, Chairman, and Drs. E. W. Busse, J. E. Markee, Eugene Stead and Barnes Woodhall.

During the year Dr. Walter Gordy of the Department of Physics was appointed James B. Duke Professor of Physics. At present fifteen of these honored chairs are held by active members of the faculty.

A report on the first year's operation of the new World Rule of Law Center is in order. It will be recalled that its purpose is "to advance the

objective of getting legal rules and procedures accepted and used in the settlement of international disputes, including disputes that threaten world peace." It aims to do this by maintaining a nucleus and clearing-house of ideas, activities and research that will advance this goal.

During the last year the beginnings of a working staff were put together with the addition of specialists in international and comparative law. There has been a heavy emphasis on research, to be carried out here and elsewhere. Some of the areas of investigation considered are: study of the United States' reservations in accepting the International Court; the world judicial, arbitral and mediation structure; and legal problems involved in international river basins. A series of publications dealing with general principles of law is planned, as well as a study of the legal means for facilitating and safeguarding overseas investment.

It is apparent that a great deal of energy has gone into the planning of the Center. Mr. Arthur Larson, its director, has taken his case to a variety of groups and leaders throughout the United States. We are now awaiting action on a number of applications for support of the Center.

The major item in our construction program for the year was the Biological Sciences Building. This new facility has been designed to afford space for the Botany and Zoology Departments and the School of Forestry. By the opening of the 1959-1960 year the plans were almost complete. To be included in the structure are class and seminar rooms, many laboratories, an auditorium seating 400, an air-conditioned library for the joint use of all occupants and air-conditioned research areas. The hope was that construction might begin shortly after January, 1960. Last year a small one-story unit was erected as an auxiliary unit to the larger building. Its function is to house a small Van de Graaf Accelerator for Zoological research.

The status of a variety of other projects should be recorded. The building for the Office of Ordnance Research was occupied in December of 1958 and dedicated the following May. The ceremony, jointly sponsored by the OOR and the University, served to underline the close relationship between the two, as well as that of all three institutions involved in what is known as the Research Triangle.

By the end of the year the Fourth Addition to the Bell Medical Research Building was completed and in use, and work was underway on a modest addition to Duke Hospital to house equipment for cobalt therapy. We are grateful to the North Carolina Medical Care Commission and to the Hospitals Section of The Duke Endowment for supporting this latter project. Finally, in the Summer of 1959 an extensive renovation program on both campuses was completed, and by the opening of school a new, enlarged telephone installation was in use.

For some time it has been apparent that more intensive study of our physical arrangements now is necessary. Therefore, in July the Building

Committee of the Board of Trustees recommended the initiation of a Campus Planning Program "to study future physical developments and the expansion of facilities, including new roads, building sites, parking facilities and landscaping etc." An outside firm will be employed to make the study and to submit recommendations.

In some contrast to the previous year, our financial statement for 1958-1959 was a satisfying one. We continued to receive substantial gifts and grants: the total as of May, 1959 was $5,100,000. The strong hand of support from The Duke Endowment is evident in a gift of $2,900,000 which is included in the above total. Of The Endowment gift, $1,400,000 was given to the University outright and became an enlargement of our own endowment. The remainder, $1,500,000, was added to the Corpus of The Duke Endowment, the income accruing to the University.

Another item of special importance was the receipt of a grant of $294,000 from the Ford Foundation to strengthen our program in teacher education. This support will enable the Department of Education to expand its Cooperative Program in Teacher Education over the next five years. By building upon existing activities, the objective is to: (1) prepare a sizeable number of superior secondary-school teachers, most of whom would otherwise be unlikely to enter the teaching profession, and (2) to establish arrangements with liberal arts colleges and public schools which will regularly enlist and help prepare such teachers. Candidates for graduate training at Duke will be selected from among a group of colleges. They will fill teaching internships in the public schools, and upon completion of a 15-month program receive the Master's Degree in Teaching and a teaching certificate. This scheme, I believe, will be of real significance in our policy of contributing to the improvement of teacher education.

It is appropriate also to call attention to the strong support received by our virus research team in the Medical School. In the Spring the National Cancer Institute, National Institutes of Health, U. S. Public Health Service announced a grant of $1,560,000 for cancer research. Over a period of years the funds will make possible an intensive study of cancer, including the leukemias and Hodgkin's Disease. The role of viruses in cancer is thought to be one of the more promising approaches to the problem.

There were other important gifts, many of them renewals of existing projects as well as support for new endeavors. Some receive attention from those whose reports follow, in particular grants to improve salaries in the medical school and to support research in socio-economic problems. Two others worthy of mention are: an allocation of $388,000 from the National Institutes of Health for a proposed building for Gerontology, and a grant from the National Science Foundation for new facilities at the Marine Laboratory at Beaufort. The first requires our raising the neces-

sary matching funds by June, 1960. The second, amounting to $78,500, will make possible a new laboratory at Beaufort as well as expansion and renovation of the present dining facilities there.

As may be seen in this *Report*, we were able to close the year with a balanced budget. In February we were optimistic about the possibility of reducing the massive deficit in the Hospital which had occurred during the previous year. By June 30 this optimism, coupled with rather heroic work by the Business Division of the University and the Administration of the Hospital, was rewarded. The final hospital deficit ($57,440) represented a signal achievement, especially when one considers the inherent financial hazards in operating a teaching hospital.

The result of a good year was that again we were able to make worthwhile increases in faculty and staff salaries. Comparative data on the situation across the nation indicated that we were holding our own. This is reason for gratitude, not complacency. There is no mistake in our conviction that salaries must continue to receive paramount priority in our financial planning. The decision to increase tuition in the Fall of 1960 was of course a part of this objective.

Unrelated to the planning discussions but indicative of the need to adjust to increased costs were decisions to increase room rent by $25 per student per year effective in the Fall of 1960 and to increase the board rate in the Woman's College by $25 per semester, effective September, 1959. The rental charges had been unchanged for several years. The East Campus charges for board were designed to bring the rates in line with increasing food costs. The last such increase was made in 1950.

In the interest of our large corps of non-academic employees, in July of 1959 a retirement plan for this group was put into effect. Over 1000 persons became members of this plan which was designed for those not eligible for the Annuity Plan of the Teachers Insurance and Annuity Association. Fortunately the timing was such that some individuals who retired on August 31 were covered by the new benefit.

As is clear from this report and from those that follow, the University goes on, even in the midst of a full-scale self-study. Our gifts and grants for the year indicate a reservoir of continuing strength; the Loyalty Fund, ably administered and aggressive in outlook, continues to grow. Academic excellence is self-evident in the reports of the schools and colleges. Indeed, one may find cause for optimism about the future in the record of what is being accomplished here and now.

A. HOLLIS EDENS
President

REPORTS OF UNIVERSITY OFFICERS

THE VICE-PRESIDENT IN THE DIVISION OF EDUCATION

To the President of the University:

In reply to your recent letter I am transmitting herewith a report relating to the educational activities of the University for the year ending June 30, 1959.

In my report last year I referred to the fact that an essential element of a first rate American university is the degree to which it develops a standard of excellence in the conduct of its undergraduate affairs. This important area of the University's activities continues to be a topic of discussion and study, as should be the case. The Long Range Planning Committee, especially through the activities of some of its committees, has given, and is continuing to give, particular attention to these matters. From such discussions certain points appear to emerge. The first of these is the feeling of many that we still have much to do toward developing a better intellectual tone on the campus. While important steps are being taken positively to encourage this through the development of programs to identify the superior students and to provide further opportunity for their intellectual growth, there are still negative factors which many feel operate strongly to inhibit the growth of a better intellectual tone on the campus. Among these may be mentioned such events as "Joe College Day," which this year absorbed so much student energy and attention as to raise widespread protest from the faculty about the inroads that it made on the effective prosecution of classwork and study by the students. In the second place, there is a strong and growing feeling that the ownership of student automobiles is one of the important negative factors of the type referred to above. In this connection it seems that two possibilities should be given careful consideration by the Undergraduate Council under the exercise of its function stated in the Bylaws: "(B) to encourage the achievement and maintenance of high standards of teaching and scholarship in the undergraduate colleges."

One possibility would be for the Council to set a standard of academic performance in terms of grades or quality point ratio which, if not attained by the student, would not permit the latter to register an automobile on the campus. A second might be to consider a substantial fee of the order of at least $100 to $200 which would be charged to the student for the privilege of registering a car on the campus. Consideration of a regulation combining both of these elements might be the soundest and most equitable solution to the increasing problem of the impact of the large number of student automobiles on the campus and community life. In connection with the matter of a fee charge of the order of magnitude indicated, it seems clear that the University is expending substantial sums of money for the provision of parking places and the supervision by the

campus police of parking regulations which is of benefit to the somewhat less than 1,000 students who have automobiles on the campus, out of the 5,000 or more students who are enrolled.

During the year just closing much attention, time and effort have been given to the future plans for development of the University. This effort has been carried out with the cooperation of practically the entire faculty and staff of the institution and it is planned to continue this in the future, in an effort to keep the University moving ahead soundly under the present day conditions in the area of higher education. This activity has included a large element of evaluation and appraisal, both from within and without, of the University's present position in all its aspects. Included among these has been an attempt to project the financial position of the University during the next decade and to estimate the magnitude of the resources which will be required if its program is to go ahead strongly and effectively during the next ten years. From this financial analysis one element has emerged quite clearly, namely the necessity of calling on the students to bear a larger proportion of the cost of their education than has been true in the past. Specifically this means that it will be necessary to look ahead in the next ten years to several substantial increases in the tuition and fees now charged. Fortunately, the University is in a strong position relative to other institutions of its type in this respect, as many of these already charge considerably more in tuition and fees and many others are currently raising the level of such charges. The other element which has emerged from the Long Range Planning studies is the acute need for additional space on the campus to provide more modern and effective facilities for teaching and research at all levels. Included in this category is the need for better classroom facilities, expansion and modernization of the Library, provision of additional library space and more adequate housing for many areas in the professional schools.

The last and most important element which has emerged from the past year's study is the urgent need to improve the level of instructional salaries for the faculty throughout the University. The demand for able and effective college and university teachers of all types is, and has been, acute for the past several years as the student populations in higher education continue to grow. This situation will become increasingly acute in the next three to four years and must be met by increasing the levels of instructional salaries throughout the institution if we are to continue to hold and acquire able and competent faculty personnel, especially during the next five year period. It is the unanimous opinion of those who have been concerned with these planning studies that substantial increases in instructional salaries should be given the highest priority among the many needs of the institution in the years immediately ahead. A dedicated instructional staff of high quality is, and will continue to be, the most important single element in the complex of things which make a strong

university, including good facilities, good students and an active program of teaching, research and scholarship. Without this crucial element there will be the form but not the substance of a great educational institution.

Within the broad spectrum of the various educational and scholarly activities of the University, there are several matters to which attention might be drawn. The first of these is the renewed support for a further five year period through a grant from the Carnegie Corporation for continuance of the activities of the Commonwealth Studies-Center here at the University. The Annual Report of the Corporation for 1958 comments as follows with respect to this activity. "The Center was established in 1955 with a Carnegie grant, and in its few years of existence has become widely recognized as *the* center for British Commonwealth interest and activity in the United States." This enterprise continues to have an important impact in the area of the social sciences through the collaboration of key members of the Departments of Political Science, Economics and History.

The research activities of the Center for Aging Studies at the University, established several years ago through a grant from the National Institutes of Health, continue to move strongly ahead so that the University has come to be regarded as one of the important Centers nationally which are carrying on investigations relating to the health of older people. For some time it has been realized that the problems confronting such people are not only those with respect to their health, but also those which concern their economic and social status and their ability to contribute to the community and social structure generally through some type of meaningful occupation as they advance in age. The activities of the Center and the fruitfulness of its program will be greatly enhanced through a grant from the Ford Foundation which was made earlier this year for research and study of the socio-economic problems of older people. This work will be carried on mainly by members of the staff of the Departments of Economics and Sociology and will be closely coordinated with the research activities already under way with respect to aging in various groups in the Medical Center. Finally, it should be mentioned that a strong group in applied mathematics is being assembled through collaboration between the Department of Mathematics and the Office of Ordnance Research. This activity is of interest, not only to that office, but also provides a strong background resource for a number of the scientific departments of the University, such as Chemistry, Engineering and Physics. As part of this activity, a computing center with a 650 I.B.M. Computer was set up several years ago. This is being supported by a grant from the National Science Foundation and has proved to be an important adjunct facility, not only for the natural science interests of the University, but also is being used in connection with certain problems in

the social sciences. This enterprise fills a much needed gap in the background resources for carrying on effective research in many areas of the University.

PAUL GROSS
Vice-President

THE DEAN OF UNDERGRADUATE STUDIES

To the President of the University:

As a unit in the larger operations of the Division of Education, this office is concerned with many activities relating to the undergraduate colleges and their students. These range from policies of admission and scholarship aid for members of the incoming freshman class to problems of curriculum and academic standards which bear upon the scholastic careers of graduating seniors; from the secretaryship of the Undergraduate Faculty Council to membership on numerous committees closely associated with the many details of academic programs and regulations; from studies of anticipated enrollment and admissions to problems of staffing in the departments participating in the education of undergraduates.

Much thought during the current year has been devoted to educational procedures as they may affect student programs and requirements in the future. Curriculum changes and interesting instructional experiments are being undertaken at better colleges throughout the country to meet the changing educational conditions and the changing student bodies. We have moved and should continue to move to strengthen programs, not only for the superior student, but for all students. The marked increase in the capacity of our entering classes for the past few years makes mandatory a continuous study looking toward the formulation of stimulating courses and programs.

The Graduation with Distinction program, instituted several years ago, in fourteen departments, is filling a need for many of the better students in the senior year. In several departments special sections for gifted freshmen enrich the educational experience for selected numbers in the first year. As yet we have taken only tentative steps toward providing sophomores with similar courses that will provide continuing challenges in this very difficult year.

In the autumn of 1958, an informal group of interested faculty members and administrators in conjunction with this office held a successful Conference on the Superior Student, attended by selected secondary school officers and local staff for the purpose of finding areas of cooperation in the education of the gifted student. The Conference is now bearing fruit in the establishment of special programs in the state for superior seniors in the secondary school. Some of our staff will serve as consultants to schools which may wish to inaugurate such courses. At the same time, we shall need to move toward enriched programs on the college level to continue the work done in the secondary school. The approval by the Undergraduate Faculty Council of the proposal to grant limited credit to students for courses taken in the secondary school and tested by examinations given under the auspices of the Advanced Placement Program of

the College Entrance Examination Board provides a basis for identifying the superior student and for recognizing his achievement. In the subcommittee on the Undergraduate Colleges, appointed by the University Long Range Planning Committee, much careful exploration is being made in this important area, and it may be expected that its report will include forward-looking proposals for courses of study for the undergraduate student.

As a necessary concomitant to these efforts, this office has worked on the compilation of figures from the class census reports to determine the number of courses and sections currently offered; the class enrollments for all groups of classes through the 100 level, a six-year study of class enrollments and the percentage of the total by individual departments, a detailed study of departmental and individual load hours, semester hours, and semester-hour enrollment; and finally a study of the proportion of teaching effort devoted to undergraduate and to graduate students. Such studies enable us to assess fairly accurately our present experience as to enrollments and staff loads and provide the necessary data upon which plans for the future of the undergraduate colleges may be based.

CHARLES E. WARD
Dean

THE UNIVERSITY REGISTRAR

To the President of the University:

The year 1958-1959 has been one of perfecting procedures and techniques and of applying these to a greater volume of students and information concerning them. The one new major responsibility added to the work of the office was the registration for Summer Sessions which takes place shortly after Commencement. This was accomplished with the assistance and support of the Director of the Summer Session and his staff.

ADMISSIONS

Trinity College and the College of Engineering: The meaningfulness of admissions is often seen most graphically with comparative statistics. This is not to imply that interest in the student as an individual personality has lessened, for more man labor hours have been spent on selection of the right applicants during the current year than ever before; but it is equally true that in a limited space the statistical approach has relevancy. This section of the report covers the Summer Session of 1958, the Fall Semester of 1958-59 and the Spring Semester of 1959.

During the year a total of 3,379 applications were initiated and processed, of which 307 either were never completed or were withdrawn before a decision was made. Therefore, 3,072 decisions were made. This constitutes an increase of 495 total applications and 515 decisions over the totals of the previous year.

From the applicants accepted, 872 enrolled as follows: Freshmen 708, Transfers 39, Former Students 125. These figures indicate an increase in new students, of whom 62 were Freshmen. Although a small increase was planned, the actual number was 28 more than the established goal.

Of the 708 Freshmen admitted for the Fall, 571 (80.6%) had attended 387 different public secondary schools, while 137 (19.4%) came from 91 different independent secondary schools. This division compares very favorably with those of the past five years. These public and independent schools are located in 39 states and 10 foreign countries.

The quality of the new class as measured by objective criteria improved, thus ending the signs of leveling off which were noted in 1957-58. Six percent more Freshmen were from the highest quarter of the respective school classes and 90.7% of the class were from the top half of their graduating classes. The undergraduate colleges continued to recommend that candidates take the Scholastic Aptitude Test of the College Entrance Examination Board or the Duke University pre-admissions tests. The following table is most illuminating for the three years listed.

	September 1958	*1957*	*1956*
Scholastic Aptitude Test.	693 (97.9%)	600 (92.9%)	455 (72.6%)
Duke University Tests...	1 (0.1%)	19 (2.9%)	68 (10.9%)
No Tests.....	14 (2.0%)	27 (4.2%)	104 (16.5%)
	708 100.0%	646 100.0%	627 100.0%

Even more encouraging are the test results of the Freshmen who took the Scholastic Aptitude Test which show that the mean Verbal Aptitude score increased by 13 points to 527 and the mean Mathematical Aptitude score increased by 16 points to 578. While there is still much room for improvement, this quality measurement is most gratifying. This helpful criterion has now become a requirement for admission rather than a recommendation and will be applied to candidates for admission in 1960 and thereafter.

A further tentative step has been taken in requiring all candidates for "Early Decision" for admission in September, 1960 to submit College Board Achievement Test scores in three subjects. This, however, will concern only a small number of students.

Mr. Richard M. Ware (Class of 1954) joined the Admissions Staff as an Admissions Counselor replacing Mr. Paul C. Parker. Mr. Ware spent three years as an officer and pilot with the Strategic Air Command and one year at the Columbia University Graduate School of Business Administration where he received his M.S. degree.

Additional statistical data involving geographical and religious distribution, as well as courses of study are submitted in the statistical volume at the end of the academic year.

The Woman's College: Although the entering class was substantially smaller in 1958-59 than in 1957-58, the number of applications reached an all-time high of 1,973. Of this number, 1,772 were from Freshmen, 131 Transfers, 18 Former Students and 52 for various special categories. Of the total number, 1,950 were for admission in September and 23 for February. From this mass of applications, only 382 could be matriculated during the year: 331 Freshmen, 38 Transfers and 13 Former Students.

The larger number of applications and the smaller number of places available gave the Committee on Admissions many more problems, but at the same time enabled them to choose an abler and better prepared group. Of the Freshmen entering in September, 1958, 283 (85.8%) were public school graduates, while 47 (14.2%) were from independent secondary schools. Of the public school matriculants, 96% were in the highest quarter of their classes, while 75% of those entering from private schools ranked in the highest quarter of their graduating classes.

Since all but one foreign student were able to submit Scholastic Aptitude Test scores, it is significant and pleasurable to report that the mean Verbal Aptitude score increased 11 points to 586 and the mean Mathematical Aptitude score increased 30 points to 566. These objective criteria further attest to the high quality of the entering class whose personal qualifications fully equal their intellectual attainments.

College-High School Relationships: During the year 214 secondary schools were visited, and some 4,489 students were contacted. This again constitutes a most favorable increase over the previous year of 26 schools and 605 students. The additional visitations and contacts were made with no increase in personnel, but with slightly more intensive coverage of a smaller area. The present year included visits in 17 states with a major effort in the Southeastern region and a revisit to New England which had not been made in the previous year. No trip was made to the Southwest or the Northwest. In North Carolina 71 schools were visited, and 1,968 student contacts were made.

The Student Contacts Committee was again active, and its members made a major contribution by school visits. The new members are Professor Robert Dickens, Dr. I. B. Holley, Dr. Hugh Hall, Dr. Jane Philpott, Dr. Charles Vail, Professor Loren Withers and Mr. Robert Thompson. To these and to the continuing members listed in last year's report much appreciation is expressed, for the high number of school visits is made possible by their willingness to give of their time and energies to this significant work. Numerous alumni also have contributed time and talents to contacting prospective students, and their loyalty and devotion are both commended and appreciated.

A conference with 19 school counselors from Miami, Miami Beach, Fort Lauderdale, Hollywood and Coral Gables, Florida was held in December. The exchange of ideas and information was most gratifying, and it is felt that the conference strengthens our understanding of the schools and our ties with the area. More local conferences are planned.

This has been a very productive year in the further development of our school relations. There was the conference on the superior student in which the department participated, as well as the publication and wide circulation given to the brochure entitled "The Superior Student." A second brochure entitled "The Early Decision Plan" was printed and distributed to over 3,000 schools from whom we have matriculated students in the past several years. With the cooperation of Dean C. E. Ward, the new "Bulletin of Information for the Prospective Student" was produced and is being distributed. There has been a most generous response to the two issues of the "Admissions Newsletter" which among other items carried for the first time the freshman class profile for 1958-59. These several publications are attempts to meet needs and requests for more information about Duke University.

RECORDS AND REGISTRATIONS

The current year has witnessed the forward progress of IBM machine techniques and production under the direction of Mr. W. L. Brinkley, Jr. and with the active cooperation and participation of Mr. Riley Smith and the Service Unit staff. A most gratifying relationship now exists between these offices. During the first half of the year our volume of statistics became stabilized and was produced with a minimum of effort. A major contribution in this area has been the development of machine processes through the use of the IBM 826 machine, which was installed in the Central Records Office. The unexpected resignation of Mrs. Betty Bradford as statistician has caused a temporary setback and again creates the problem of orienting and training a new worker. The IBM Service Unit was most helpful in the installation and use of the 826 machine.

Plans are underway for the machine posting of student permanent records. It is hoped that the class entering in September, 1959 will be on the new permanent record system. A statistical study has been initiated by Mr. Brinkley on the objective criteria for selective admissions. It is believed that this study, which should be completed during the next three months, will furnish a very helpful aid to the Committees on Admissions in the evaluation of applicants.

Although this has been our best year to date for retaining clerical personnel, we continue to lose some of our better individuals for the same reasons, i.e., low salary rates and the five-day week. However, we are encouraged to hear that this problem is being studied on a University-wide basis.

GENERAL

In general the year now closing has been one of refining techniques and procedures and of stressing college-school relations. It has been possible to indulge in some experimentation which it is hoped will prove profitable in the area of registration and pre-registration. An invitation to survey the records of the School of Nursing has been received.

An admissions processing fee of ten dollars was charged all new applicants. The charge did not materially reduce the number of applicants. It had no noticeable effect on the North Carolina candidates and did remove a few "ghost" applicants from the Middle Atlantic States. The fees were very adequately handled by Central Records along with transcript fees.

The administrative staff has been very active in state, regional and national groups and has contributed substantially to the organizations in which membership is held. All have contributed to the expanding public relations efforts of the University.

The Office of the University Registrar continues to benefit from the cooperation, counsel, good will and assistance given so generously by the

Dean of the University, the Dean of Undergraduate Instruction, the academic deans, the Scholarship Committee Secretary and their administrative associates. A particular word of thanks should go to the Director of Athletics, who most helpfully and cooperatively enabled the consolidation of registration at the Indoor Stadium. Also commended to you are the individuals who comprise the entire staff of this office, each of whom has contributed time and devotion to duty which are essential ingredients of successful cooperative endeavor.

R. L. TUTHILL
Registrar

TRINITY COLLEGE AND THE COLLEGE OF ENGINEERING
ADMISSION BY TERMS

	Summer, 1958	*Fall, 1958*	*Spring, 1959*	*Total*
Freshmen	1	707	..	708
Transfers	4	33	2	39
Old Students Returning	10	72	43	125
Totals	15	812	45	872

WOMAN'S COLLEGE
ADMISSION BY TERMS

	Summer, 1958	*Fall, 1958*	*Spring, 1959*	*Total*
Freshmen	2	328	1	331
Transfers	2	32	4	38
Old Students Returning	1	5	7	13
Totals	5	365	12	382

RELIGIOUS DENOMINATION OF UNDERGRADUATE STUDENTS
FALL SEMESTER, 1958

Denomination	*Trinity College*	*College of Engineering*	*Trinity and Engineering*	*Woman's College*	*Grand Total*	*Rank*
Methodist	580	123	703	373	1076	1
Presbyterian	277	90	367	273	640	2
Baptist	185	65	250	103	353	4
Episcopal	277	69	346	196	542	3
Lutheran	64	27	91	34	125	7
Catholic	108	45	153	49	202	5
Hebrew	124	12	112	29	165	6
Other	218	78	320	140	436	
Nothing	16	10	26	8	34	
Total	1849	519	2368	1205	3573	

ENROLLMENT

SCHOOL OR COLLEGE	*Fall, 1958*	*Spring, 1959*
Trinity College	1831	1737
Woman's College	1192	1147
College of Engineering	519	482
Graduate School of Arts and Sciences	586	564
Divinity School	230	219
School of Law	148	144
School of Medicine (Including Post-Graduate Med.)	558	544
School of Nursing	314	301
School of Forestry	60	57
Totals	5438	5195

PARAMEDICAL ENROLLMENT

Anesthesiology	7
Dietetics	5
Hospital Administration	8
Master of Science in Nursing	9
Medical Technology	1
Pharmacy Interns	2
Physical Therapy	13
X-Ray Technology	10

DEGREES CONFERRED, JUNE, 1959
(Includes degrees awarded in September, 1958)

Bachelor of Arts	
Trinity College	372
Woman's College	237
Bachelor of Science	
Trinity College	32
Woman's College	8
B. S. in Medical Technology	5
B. S. in Nursing Education	3
B. S. in Civil Engineering	20
B. S. in Electrical Engineering	27
B. S. in Mechanical Engineering	44
Diploma in Nursing	14
B. S. in Nursing	65
B. S. in Medicine	5
M. S. in Nursing	2
Master of Science	1
Master of Arts in Teaching	20
Master of Religious Education	2
Master of Education	23
Master of Forestry	18
Master of Arts	73
Bachelor of Divinity	64
Bachelor of Laws	38
Master of Laws	2
Doctor of Medicine	80
Doctor of Education	2
Doctor of Forestry	2
Doctor of Philosophy	61
Total	1220

GEOGRAPHICAL DISTRIBUTION OF UNDERGRADUATE STUDENTS
FALL SEMESTER, 1958

State	*Trinity College*	*College of Engineering*	*Trinity and Engineering*	*Woman's College*	*Grand Total*	*Rank*
Alabama	20	2	22	20	42	18
Arizona	1	...	1	1	2	38
Arkansas	5	...	5	3	8	28
California	18	...	18	10	28	21
Colorado	....	...	....	5	5	32
Connecticut	34	7	41	15	56	15
Delaware	13	1	14	10	24	23
District of Columbia	31	9	40	7	47	17
Florida	134	32	166	86	252	3
Georgia	79	8	87	35	122	9
Idaho	1	...	1	....	1	41
Illinois	32	9	41	34	75	12
Indiana	14	1	15	7	22	24
Iowa	6	...	6	2	8	28
Kansas	1	...	1	3	4	36
Kentucky	37	13	50	22	72	14
Louisiana	7	1	8	12	20	25
Maine	2	1	3	1	4	36
Maryland	93	33	126	47	173	6
Massachusetts	25	7	32	22	54	16
Michigan	17	3	20	16	36	20
Minnesota	3	...	3	3	6	31
Mississippi	4	...	4	3	7	30
Missouri	7	4	11	16	27	22
Montana	....	...	....	....	....	..
Nebraska	....	...	....	....	....	..
Nevada	....	...	....	....	....	..
New Hampshire	2	3	5	....	5	32
New Jersey	105	30	135	34	169	7
New Mexico	1	1	2	....	2	38
New York	178	52	230	76	306	2
North Carolina	481	133	614	418	1032	1
North Dakota	....	...	....	....	....	..
Ohio	79	23	102	44	146	8
Oklahoma	8	...	8	7	15	27
Oregon	2	...	2	....	2	38
Pennsylvania	107	44	151	42	193	5
Rhode Island	3	...	3	2	5	32
South Carolina	56	14	70	34	104	10
South Dakota	....	...	....	....	....	..
Tennessee	36	13	49	36	85	11
Texas	24	3	27	15	42	18
Utah	....	...	....	....	....	..
Vermont	....	1	1	....	1	41
Virginia	108	44	152	74	226	4
Washington	2	1	3	2	5	32
West Virginia	44	7	51	22	73	13
Wisconsin	11	1	12	4	16	26
Wyoming	....	...	....	....	....	..
Foreign Countries	18	18	36	15	51	..
Total	1849	519	2368	1205	3573	

THE VICE-PRESIDENT IN THE DIVISION OF PUBLIC RELATIONS

To the President of the University:

From the point of view of the Division of Public Relations, the year 1958-1959 has not been a spectacular one though, with confidence, I can report that the departments for which I am given responsibility have had a sound and progressive year. I have satisfaction in being closely associated with the Department of Alumni Affairs, the Intercollegiate Athletic Program, the Appointments Office, the Bureau of Public Information and the over-all Student Aid Program as administered by the Executive Secretary of the University Scholarship Committee.

The successful conclusion of the 1958-1959 Loyalty Fund is a testimonial to the work of the Department of Alumni Affairs under Mr. Charles A. Dukes and to the continuing support of our alumni and friends. The final tabulations for the year show that 12,095 contributors have given a total of $307,062. Both numbers represent an all-time high and both are in excess of our goals for the year. Next year's goals have been set at 12,500 contributors and $325,000.

The successful effort this year was made possible through the efforts of the Advisory Committee of the Fund with Mr. B. S. Womble serving as chairman. For the first time a Law School program was organized, and there is optimism that it will develop quickly. During the coming year, Mr. Dukes states, "Every effort will be made to increase the individual giving level and to strengthen the entire program rather than expand or develop new programs. This seems to be especially desirable in view of the long-range planning now underway."

The Bequest Program is now being undertaken on a more serious basis than in the past. Each member of the Executive Committee of the National Council has agreed to name the University as a beneficiary in his will. "It is evident," Mr. Dukes reports, "that this source of support for the University is becoming more and more accepted as an integral part of our people's thinking." It is my feeling that the Bequest Program will gain momentum and will have real significance for the future.

An experimental feature of the Commencement Week-end was initiated this year. Parents and alumni were invited to attend their choice of four discussion groups presented by distinguished members of the faculty and staff. The response was exceptional, and the idea will be repeated again next year. Clearly, this type of program gives needed depth to the reunion activities. This year's program was as follows:

"The Russian Challenge"—Dr. C. B. Hoover, James B. Duke Professor of Economics.

"The Needle's Eye—College Admissions"—Dr. R. L. Tuthill, University Registrar.
"What's Happening to the Atom's Pieces?"—Dr. W. M. Nielsen, James B. Duke Professor of Physics.
"Investing Your Money"—Dr. Frederick C. Joerg, Professor of Economics.

The Alumni Office continues to seek ways to improve its service. The *Alumni Register* increased its circulation and made special efforts to publish articles on contemporary affairs by faculty members. The Records Office has surveyed its operation and revised its system, at once saving some space and equipping itself to furnish information more efficiently.

Finally, Mr. Dukes reports that a plaque for the Union Lobby will be installed by June of 1960. Listed on it will be the names of the past presidents of the General Alumni Association. The plaque will have special lighting and will be placed above the fireplace. "It is felt," Mr. Dukes observes, "that this plaque will furnish further evidence of the University's interest in its former students and, in an indirect way, will point out to the students and others some of the persons who have meant so much to Duke."

The Alumni Census summary as of September, 1958, follows:

ALUMNI CENSUS

TOTAL ALUMNI (all schools, living and dead, men and women)		42,195
Undergraduate schools	32,944	
Professional schools	5,617	
Graduate School	3,634	
Total	42,195	
TOTAL ALUMNI ACTIVE (all schools)	30,667	30,667
Less temporary-inactive files	385	
Net total	30,282	
Less alumnae-alumni marriages	2,560	
Total mailing file	27,722	
TOTAL ALUMNI INACTIVE (all schools)		6,839
TOTAL ALUMNI DECEASED (all schools)		4,689
		42,195

The Intercollegiate Athletic Department during 1958-1959 reports a very creditable year as indicated from the report of Mr. E. M. Cameron, Director of Athletics. Few championships have been won in a highly competitive conference, but the over-all records in all sports show that as a whole our intercollegiate teams were competitive within and without the conference area.

The Athletic Association has had a sound year financially. The report of the accounting firm which audits the University's books indicates a gratifying profit for the year. These funds accrue to the University's benefit by providing equipment and facilities for the total physical education program, including intramural activities.

The morale of the staff and the participating students has been good. The quality of the men who direct our teams elicits favorable appraisal from outside critics.

During the year Basketball Coach Harold Bradley resigned to take a similar position at the University of Texas necessitating the securing of a new basketball coach. There were 135 applicants for this vacancy. Many of the applicants having imposing records and security indicated a willingness to accept the position here if chosen. This they advised they were willing to do because of the University's athletic policy of dealing considerately with all coaching personnel and not placing this personnel under the pressures which are common in those institutions which do not have internal control of athletic policies such as is known to exist at Duke University. Mr. Victor Bubas, a valued assistant coach at N. C. State College, was, after careful screening, selected as Mr. Bradley's successor. His selection seems to have met with wide approval on the part of the basketball squad, the student body, the alumni, the sports writers and a large segment of the general public. An intercollegiate athletic program has tremendous public relations significance, the value of which cannot wisely be discounted. If a vacancy develops in an academic area, there is ordinarily little or no public concern. If a vacancy develops in a major sports position, the interest of the public, students, alumni and others is great and of continuing concern. While admittedly this is not as it should be, it is nevertheless a fact, a fact which points up the wisdom and the necessity of keeping the University's sports program well in hand and its affairs known to the University's administrative and faculty personnel.

The Appointments Office under the direction of Miss Fannie Y. Mitchell has had a demonstrably good year. The demands on this office on the part of corporate and educational representatives have been greater than in the preceding year, this being attributable to the fact that 1957-1958 was a minor recession year. Intangibly as well as tangibly, this Department is justifying its operation and budgetary support given it by the University. It is believed that it is staffed adequately to continue the enviable record it has already achieved.

The Bureau of Public Information under the direction of Mr. Clarence Whitefield is performing in a highly satisfactory manner. The integrity, the diligence and the competence of Mr. Whitefield are respected on and off the campus, and the quantity and quality of the news releases from his Bureau are evidence of the wide-spread reception of the releases by the printed media of circulation as well as by the radio and television channels of communication. Mr. Whitefield has definitely a sincere public relations flair which gives him and his department increasingly wide entreé.

Mr. Robert L. Thompson, the Executive Secretary of the University Scholarship Program, which embraces in reality the entire undergraduate student aid program, is completing his first year of full responsibility for

this program after having served a year of apprenticeship under the direction of Mr. John M. Dozier. He is conscientious, energetic and deeply interested in his work and is giving a good account of his efforts in his area of service. The volume of work involved is increasingly great. The competition for the type of students which the University desires to attract is overwhelming. Concern is herein expressed over the fact that the class of students desired is too frequently willing to accept generous and adequate scholarship awards and later to relinquish these awards in favor of others more monetarily attractive. This problem is not peculiar to Duke University, but is nevertheless one of increasing concern.

Excerpts from Mr. Thompson's report follow:

"The planning sessions held last Summer with the members of the Admissions Office resulted in a major change in the technique of handling scholarship applications. Prior to September, 1958, all candidates for scholarship aid were handled directly through this office. By this process each applicant received materials for admission as well as scholarship. After a study of the problems which this created, it was decided to process all original applications, both admission and scholarship, through the Registrar's Office.

"This change in administration, plus the application processing fee introduced this year, may account in some measure for a fifty per cent decrease in the number of scholarship applications originally received. This reduction is thought to be an indication that many of our previous applications came from students who were not sincerely interested in attending Duke. The drop in the number of applicants did not appear to make any appreciable difference in the volume of work necessary to process the applitions.

"The rising cost of a college education is placing a severe financial burden upon the available funds of the average American family. In most instances, college expenses will be derived directly from the annual wage earnings of the parents. It is discouraging to learn that so few students and their families have made provision for college costs. It is difficult to tax the assets of a family which has saved wisely for college and tell the candidate that we cannot reward the thriftiness of his family—that the family, in fact, really has an adequate amount available to send the applicant to college. The fact remains that many able students had significant need, thus prompting the Scholarship Committee to assign a student loan as a supplement to a grant-in-aid. In case of extreme need, a job award was added to the total assistance made available. Although the recommendation of a student loan to an entering freshman was an innovation this year, it has proved to be acceptable to many of the recipients who need this extra source of assistance to attend Duke. Student loans valued at $42,800 were recommended to 140 prospective students. Forty-one students returned the application forms,

representing $11,650. This number was somewhat larger than originally expected and indicates that student loans provide a realistic method of allowing the student to assist himself.

"The change in the technique of processing scholarship applications has been described. This change resulted in a somewhat different compilation of statistical data. As the table below will show, there is no lack of interest in the program of scholarships at Duke. Candidates are seeking earlier consideration of their applications for admission. This has quite naturally involved the Student Aid Office in an early review of the scholarship application under the newly adopted Early Decision Plan of the Admissions Office. By this early review, successful candidates for admission will be notified of the decision of the Scholarship Committee by October 15 of the year prior to entrance. Consideration for grants-in-aid will be given only to those candidates applying for an award on the basis of financial need."

Scholarship Applications Completed

	1957-1958	*1958-1959*
Angier B. Duke—N. C.	453	419
Angier B. Duke—S. C.	51	45
Duke Regional	288	264
Duke National	865	901
Total Scholarship Applications	1,657	1,629

In addition to the applications for our major awards, a number of applications were received in the following categories for 1958-1959:

Grants-in-aid	192
Junior College	34
Foreign Students	23

A summary of the assistance offered to students is described in the table on the adjoining page. The amounts pertain to undergraduate students only with the exception of loans which represent aid to both graduate and undergraduates.

In view of the number of excellent candidates in certain areas, Mr. Thompson has recommended that additional Angier B. Duke Scholarships be established.

As to my own activities over the year under review, other than the assumption of responsibility for the departments heretofore mentioned, it is difficult to appraise in terms of measurable accomplishment.

Through membership on the State Board of Education, I am afforded an opportunity to keep somewhat abreast the times in the realm of secondary public education particularly in North Carolina.

Type	*Number*	*Amount*
Angier B. Duke Memorial Scholarships, Duke University National Scholarships and Duke University Regional Scholarships	87	$ 73,000
Duke University School of Nursing Scholarships	11	6,250
Grants-in-aid	482	229,208
Remissions of Tuition to children of Duke University faculty members; students pursuing pre-ministerial studies; children of Methodist ministers in the North Carolina conferences	216	140,000
Awards from industry, civic clubs, and educational foundations	194	97,970
Student Loans	515	161,000
Part-time employment (approximately)	450	200,000
Total		$907,428

The membership on the General Board of Education of the Methodist Church affords valuable contact across the Nation. The presidency of the Board of Publication of the Methodist Conferences of North Carolina and the chairmanship of the Board of Trustees of the North Carolina Conference, as well as active participation in campaigns to establish four-year colleges in eastern North Carolina, offered an opportunity for wide-spread contact within the State and for strengthening the public relations ties between the Church and the University.

These connections are time-consuming, but are believed to have institutional value.

The demands on this office brought about by the gratifyingly great desire of prospective students to become enrollees here are great and becoming increasingly greater by reason of our necessary policy of highly selective admissions. Such demands make it necessary to be a liaison between our undergraduate admissions offices and the applicants themselves, their parents and interested friends, many of whom are alumni. To interpret the problems of the Admissions Office staffs in an understandable manner to the public is difficult to a high degree. In this effort, we are pleased to have had some success and are pleased to report that our dealings with the admissions staff personnel have been pleasant and on their part commendably cooperative. My own appraisal is that the two offices of undergraduate admissions are doing year by year a better job under increasingly difficult competition.

In the year of active Long Range Planning studies, I have had but little part. A recommendation that there be created here at the University an Office of Director of Development has my unqualified support. It is my feeling that such an office should be created on a permanent

basis, that a director of established competence be obtained and that such director be of a level of a senior officer of the University responsible directly to the President of the University. In this way, all offices of the University would have equal and direct access to the Director of Development. The public relations office of the University should work in very close contact with a Director of Development. The idea of having a director is not new nor, to me, a radical departure. With such an office and officer, I would offer full cooperation and have some ideas as to the type of person who, in my judgment, ought to be retained in such a capacity.

My appreciation of my association with the University increases as year by year I attempt to serve it.

CHARLES E. JORDAN
Vice-President

THE VICE-PRESIDENT IN THE DIVISION OF STUDENT LIFE

To the President of the University:

Reports have been received from the following officers in the Division of Student Life:

Mr. W. J. Griffith, Director of the Student Union
Professor Paul Young, Director of Choral Music
Professor K. J. Reardon, Director of Duke Players
Professor J. C. Wetherby, Director of Debate Activities
Dr. Paul R. Bryan, Conductor of the Marching Band
Mr. H. C. Wilkinson, Chaplain to the University and Director of Religious Activities
Dr. E. L. Persons, Director of Student Health
Mr. E. M. Cameron, Director of Physical Education and Athletics
Dr. Henry Weitz, Director of the Bureau of Testing and Guidance
Dean Robert B. Cox, Dean of Undergraduate Men

Excerpts from some of these reports are included in this report, and full copies of all reports are sent to the President's office.

In my report last year I made special note of the excellence of the Chapel Choir. The continuing excellence of the music in the regular and special services of the Chapel is a source of genuine satisfaction to those who are privileged to hear it. Although a limited number of professional and semi-professional singers is necessary to the success of the Choir, it is quite clear that an opportunity for as many qualified students as can be accommodated must continue to be the rule governing the composition of the Choir. The responsibility of conducting the Choir as a definite and important part of worship services must always be emphasized. Professor Young stresses this essential contribution in these words: "The Chapel Choir has increased its highly important contribution as an integral part of the spiritual life on campus."

It was recognized last year that Professor Young's schedule is entirely too heavy for one person to carry without assistance. In consequence, he was authorized to recommend an assistant, and provision was made in the budget for the necessary salary. Unfortunately, we could locate no available office space for an assistant, and it was decided that it would not be feasible to secure a person without the minimum necessary space. Actually, space for the efficient work of the present choral director is an acute problem. If we can possibly arrange even limited space for an assistant director, we shall make every effort to secure a man for the coming year. We are also in urgent need of a room in which the Men's Glee Club can practice.

Special note should be made of the continuing increase in interest in the Woman's Glee Club and of the great progress which has been made in the last two years by this group. Reports on the performances of the Men's Glee Club continue to be good. A large, well-balanced group has performed during the year.

In accordance with their usual practice, the Duke Players have presented three major productions—two in the Fall and one in the Spring. In March, in cooperation with the English Department's new freshman English program, *Hedda Gabler* was given. Although attendance was not required, a much larger audience than usual was present for the production. The number of students participating in the work of The Players was about the same as last year. There was, however, a need for more qualified students to handle the technical aspects of the staging of the plays. This Spring The Players, in cooperation with the Department of Art, Aesthetics and Music, gave a studio production of six scenes from opera. The response to this part of the program was excellent. This innovation is, in my judgment, quite worthwhile. The Christmas Pageant was planned this year with Mr. Reardon as Director. Because of a heavy snow on the day the Pageant was to be given, it was cancelled.

The Duke Players have, in my opinion, had a successful year. With the small financial assistance that we have provided in the budget of this office and from the Department of English, the group has been able to improve the quality of its work. Professors Reardon and Michalak continue to give effective direction to the group.

Interest and participation in the debating program continue to increase. This year thirty students have participated in inter-collegiate competition. Forty students were active in the debating program, including tournaments, dual debates and discussion tournaments. Of note is the increased interest shown this year on the part of students in the Woman's College. Professor Wetherby is carrying a nine hour teaching load and is also serving as advisor to the campus radio station. Because of the increasing amount of work in these areas, it seemed necessary to secure an assistant. Mr. Carl Stewart, one of our law students, has assisted him this year effectively on a part-time basis.

Professor Paul Bryan reports that band activities at the University "have progressed in a highly satisfactory manner" during the year under review. The service of the Marching Band to the community continues to be appreciated. The Concert Band again this year made an annual tour and participated by special invitation in the Music Educators' National Conference in Roanoke, Virginia. This recognition and the performing of Vittorio Giannini's *Symphony for Band*, written especially for the Duke Concert Band, are sources of gratification.

In the Spring semester a new group was formed on an experimental basis. The Varsity Band, as it is known, serves as an outlet for members

of the Marching Band who do not have an opportunity to continue their interest after the football season. It also serves as a reading group for others, especially music majors, who need the additional experience. The experiment has apparently proved satisfactory.

In July, 1958, the Reverend Robert P. Hyatt assumed his duties as Associate Director of Religious Life for the West Campus. This position was vacant during the academic year 1957-58. His work during the year has been quite satisfactory. Especially noteworthy is his work with the YMCA. Miss Barbara Benedict, Associate Director of Religious Life for the East Campus, continues to render effective service. Her leadership in group activities and her interest in personal counseling are worthy of note.

Five denominational chaplains have served their respective groups during the year: Rev. William C. Smith, Jr., Baptist; Rev. Joseph O'Brien, Episcopalian; Rev. Harold Sticht, Lutheran; Rev. Arthur Brandenburg, Methodist; Rev. Charles E. Johnson, Jr., Presbyterian. Because of Mr. Sticht's illness during the year, a graduate student in religion, the Reverend Ralph Doermann, has substituted for him.

I continue to be grateful for the effective and dedicated leadership that Chaplain Howard Wilkinson is giving to the religious life program in the University. His administrative ability, his good judgment and his demonstrated effectiveness as a counselor contribute heavily to the success of the program. Chaplain Wilkinson reports that attendance at the Sunday worship service continues to be quite gratifying. On two Sundays during the academic year, the Chapel was filled to capacity, standing room was taken, and approximately 150 persons heard the service while seated in Page Auditorium. The average attendance fills the Chapel Sunday after Sunday.

As in recent years, we have continued the policy of inviting one distinguished guest preacher per month to preach at our morning services. During the year the following guest ministers have occupied the pulpit: Dr. Ralph W. Sockman, Minister of Christ Methodist Church, New York City; Principal John Marsh, of Oxford University's Mansfield College; Bishop Sante U. Barbieri, of Buenos Aires, Argentina, and a President of the World Council of Churches; Dr. Elfan Rees, of Geneva, Switzerland, an Advisor to the World Council of Churches; Dr. James F. Peter, of the University of Queensland, Australia; Methodist Bishop Paul N. Garber, of Richmond, Virginia, the presiding bishop of the N. C. Conference; Dr. Albert C. Outler, distinguished theological professor of Southern Methodist University; President Herbert Gezork, of Andover Newton Theological School; Dr. Paul Scherer, of Union Theological Seminary, in New York City.

In addition to the regular Sunday morning service in the Chapel, organ recitals have been given on the first Sunday of each month while the University was in session. Mrs. Hendrix has given two of these recitals

during the year, and the following guest organists have appeared: Pierre Cochereau, organist at Notre Dame Cathedral in Paris; Donald McDonald, Professor of Organ at Westminster Choir School, Princeton, N. J. The Chapel Choir gave two special performances during the year: Handel's *Messiah* and Mozart's *Requiem*. Large and appreciative audiences attended these special presentations.

Space does not permit a more detailed statement concerning the Chapel and related services. A complete statement concerning these services and the activities of the University Religious Council is given in Chaplain Wilkinson's annual report and the reports of the associate directors.

In the area of the Student Health Program, we have experienced a normal year since, fortunately, we have had no serious epidemics. The incidence of illnesses and the services rendered follow a normal pattern. I feel that our Student Health Program, supplemented by a very reasonable insurance policy made available on a voluntary basis to our students, is working quite well. Actually, the yearly premium for this supplementary coverage will be slightly less next year than in the present year.

The Director of Student Health, Dr. Persons, emphasizes again this year the pressing need of a new infirmary located on the Woman's College Campus. This need has become more acute with the addition of 200 women in the Woman's College. It is urgent that as prompt attention as possible be given to this obviously essential building. When further consideration is given to the possibility of developing a Health Center, careful attention should be given to Dr. Persons' recommendation.

The Director of Physical Education and Athletics, Mr. Cameron, gives full and detailed statistical information on the athletic program for men in his report. Again, I call special attention to the number of participants during the year 1958-1959 in intramural sports. The number is 4,532, as compared to 3,400 in the year 1957-1958. We view this program as important in the life of our students.

The report of the Director of Testing and Guidance, Dr. Henry Weitz, shows that 500 new cases were initiated in the Bureau during the year. This figure represents an increase of 84 cases or about twenty per cent over the preceding year. The Director points out that the majority of the increase in new student cases is the result of the experimental and counseling program initiated for gifted students. Obviously, the new cases do not represent fully the counseling service of the Bureau.

During the year the Bureau has administered fifteen group testing programs in which a total of 2,426 Duke students have participated. This number represents an increase of 455 examinees or twenty-three per cent above the number of students examined in these programs last year. The services of the Bureau were used in administering

thirteen national group testing programs, College Board Tests, the Graduate Record Examination, and others, in which 702 persons were examined. These figures, while not all-inclusive, give an indication of the breadth of the testing service.

Dr. Becky White, Senior Counselor in the Bureau, submitted her resignation effective at the end of the academic year. She has accepted a position on the West Coast. We regret to lose her services.

GENERAL COMMENT

Organ

For several years the need for a practice organ has been apparent. During the year we learned of the availability of a very excellent organ, built for the personal use of Mr. Ernest White, which could be purchased at a considerable saving. Fortunately, a part of the cost was available through special funds designated for this use by the donors. The University has decided to purchase this organ for early installation. It is to be located in the Woman's College Auditorium where it will serve the dual purpose of a practice organ for organ students and will also be available for concerts and recitals on the Woman's College Campus.

Russian Students

Duke University was invited by the Committee on Friendly Relations among Foreign Students which is processing the exchange of Russian students, under the Student Exchange Program of the State Department, to entertain here next Fall a delegation of Russian students. The University has agreed to participate in this program, and a special committee to make arrangements for the visit has been appointed. This committee is composed of Dr. John Alden, Chairman; Dr. C. B. Hoover, Dr. Ralph Braibanti, Dr. Bronislas Jezierski, Miss Barbara Benedict, Mr. W. J. Griffith, Mr. Clarence Whitefield, Mr. Warren Wickersham and Miss Mary Maddry.

Fellowships and Scholarships

A complete list of fellowships and scholarships awarded to our graduates of this year is not available. It is worthy of note, however, that this year from our undergraduate and graduate students thirty applications were made for Fulbright study, the largest number of applications to date. It is also gratifying to note that in a recent report from the Danforth Foundation, covering a period of five years, thirteen Duke graduates have been awarded Danforth Fellowships. This is the largest number of fellowships granted to any one institution in the United States in the period which the report covers. The number of our students receiving such fellowships as Woodrow Wilson, Noble Foundation and others is encouraging.

In connection with fellowship and scholarship awards, I want to express my official and personal appreciation of the very faithful and efficient work of the screening committee which has served to examine records and interview candidates for awards for several years. I am especially grateful to the following who have served so faithfully: Dr. John Tate Lanning, Dr. Clarence Gohdes, Dr. Lloyd Saville, Dr. Charles Bradsher and Dr. Taylor Cole.

Publications

The Publications Board has served faithfully and well in its efforts to guide and direct the affairs of the publications. There have been from time to time, as in the past, causes for disappointment in the quality of the work in the publications and in the lack of judgment exercised by the students in charge of these publications. It should be pointed out, however, that the *Chronicle* this year received the All America Award. The *Peer* which was reinstated this year, without aid from the publications fee, has apparently been fairly successful. Much concern is still felt over the *Archive*. It seems important that the student body should have a medium of a literary magazine through which those interested and gifted in writing may express themselves. Unfortunately, lack of interest in the publication is a cause for continued concern. With the assistance of the English Department, the Literary Arts Celebration was held this year. Professor Blackburn and others hope that this may serve as an added incentive to the *Archive* and its work.

The Engineering College should be congratulated on the generally good quality of the *DukEngineer*. This publication is not subsidized, but is financed by the students of the Engineering College.

Traffic Commission

In the Fall semester, the Traffic Commission requested that the Chairman appoint a special committee to make thorough study of our traffic regulations, space, traffic flow and other problems connected with the overall traffic situation. The following persons were appointed and have made a careful study of the present problems and projected plans and have made suggestions for future planning: Mr. John Dozier, Chairman; Mr. Charles Frenzel, Mr. W. E. Whitford, Professor Edward Bryson, Professor K. J. Tharp, Professor Robert Dickens, Professor William Stinespring, Professor Richard Leach, Mr. James W. Harper, III.

The Commission has studied the suggestions and has, with few exceptions, given its endorsement to the report. Very genuine thanks are due the committee for a painstaking and careful study.

. . . . . .

Brief repetition of the basic concept in the area of student life stated in earlier reports may be in order, especially in view of our efforts at self-examination and our developing plans for the future.

Were it desirable, there is no probability that students would fail to be interested in activities on the campus—some related closely to their studies and others related only slightly or not at all. It is our conviction that all worthy activities be directed, insofar as possible, by competent and experienced staff members to the end that extra-curricular interests be kept in proper relation to the central purpose of university life—intellectual development. It would, however, be unrealistic to assume that there is not meritorious potential in many of these activities, properly understood and effectively directed. Activities which do not contribute to this end should not be sponsored by the University. We need desperately, it appears to me, to use every means at our disposal to encourage the development in our students of a strong sense of personal responsibility and commitment to sound values, and to impress upon them in the classroom and in their extra-curricular efforts the pressing need for intelligent and sensitive discharge of their obligations to society. The individual student cannot be "compartmentalized." Student life officers and faculty members must complement each other. Both are dealing with the whole individual.

As heretofore, the members of the Vice-President's Staff have met regularly each month. We consider these meetings important to the work in which we are engaged. To my associates I express sincere appreciation for their dedication and their untiring efforts in their respective responsibilities.

H. J. Herring
Vice-President

THE SECRETARY

To the President of the University:

As Secretary of the University my activities have been principally routine in nature. This has been true to a large extent because of the demands of my business office association. The contracts of the University have crossed my desk for signature and to have affixed to them the University Seal. Notices of all General Faculty meetings have been sent from my office. In addition, copies of the report of a committee appointed by the University Council to consider a proposal concerning tuition awards for faculty children as well as an opinion ballot about this proposal were sent out. The results of this ballot were tabulated and reported to the Secretary of the University Council and the President of the University. The nominating and final ballots used in the at-large elections of the University Council were prepared, mailed, received and tallied in my office. Minutes of all University Faculty business were prepared and filed. All other routine duties of the office have been attended to.

It is my hope and expectation to develop other projects related directly to the Secretary's office. Two specific projects were described in my report to the University Committee on Long Range Planning. These projects were discussed as follows:

As the Secretary of the University, two projects lie dormant for want of time but will be brought to fruition when time can be found for planning. The University community—4,200 employees and 5,600 students —suffers to some extent because no medium of communication exists. The *Chronicle* serves reasonably well for students, but staff and employees feel no oneness and, as a group, little sense of mission. Letters from department chairmen, deans and other administrative officials sent at irregular intervals disseminate information, but a regular internal publication from the Secretary's office could do much to acquaint the Duke family with the University's hopes, dreams, plans and policies. The general format of such a newsletter is clear, and a number of good examples from industry and other institutions have already been collected and reviewed. Within the coming year it is the expectation of the University Secretary to launch this project.

The second planned for but not executed project relates to the inadequacy of records concerning the staff and employees of the University. There is no one office which maintains a file of all employees of the University. Information relating to eligibility for membership in the Campus and Faculty Clubs is difficult to obtain. Rosters for groups holding official social functions, provision of information to agencies desiring to know about the status of employees and a stratification of employees by rank both within the academic and outside the academic areas seem neces-

sary from time to time. It is the hope of the Secretary to establish such a master list and to provide the mechanics for its perpetual maintenance. Once established, such a central file could serve many uses for persons within and without the University who can clearly demonstrate their "need to know" as well as their right to have access to such information.

The mechanics of preparing and maintaining an official file of all employees have been discussed with the Machine Tabulation Office of the Business Division, and it is my hope to complete the preliminary steps of development within the next six months.

John M. Dozier
Secretary

TRINITY COLLEGE

To the President of the University:

The report of 1957-1958 concentrated on measures by which the intellectual climate of the undergraduate student body might be improved. The experience of the past year has emphasized the obvious fact that effective results will require the united effort of faculty and administration. The officers of the administrative staff of Trinity College are vitally interested in the matter and pledge their whole-hearted cooperation in concerted action designed to achieve the desired objective.

During the past year the staff has sensed an intellectual groundswell among responsible segments of the undergraduate student body. Stirred by reports of long-range planning, student leaders have devoted time and thought to the future development of the University. Individually and collectively they have voiced their opinions. Among the points which they have emphasized are: inadequacy of provisions for the superior student; ineptness in certain areas of undergraduate teaching; absence of real intellectual challenge in too many classrooms and on the campus; deficiencies in the faculty advisory system; shortage of library and study facilities for undergraduate students; the dormitory situation; and the effects of the fraternity system.

Much of their criticism appears to be valid. There is pressing need for substantial improvement in the residential area and in undergraduate library facilities; for a close scrutiny of the curriculum, particularly with reference to the first two years; for positive steps at the departmental level to improve the quality of teaching; for readjustments in the Advisory System; and for an objective review of the social life and extra-curricular organizations of the campus. The staff agrees with the often expressed opinion that remedial efforts are hampered by the fragmentary approach to student needs and problems with resultant difficulty in achieving unified policy and concerted action.

The existence of this groundswell is worthy of note since, if it does exist, it provides an element which will strengthen the concerted action of faculty and administration. Measures designed to improve the intellectual climate will encounter a constructive response from significant areas of the student body. The pressing need at the moment is imaginative and forceful leadership.

The staff is gratified to report that during the past year there has been evidence of progress. A notable improvement in the intellectual tone of the freshman class has occurred. The averages in both the verbal and mathematical scores of the CEEB tests are appreciably higher than in 1957-1958; the number of freshmen who earned a C average or above during the Fall semester was approximately twenty percent higher than last year;

those who earned a B average or above approximately forty percent higher; and those who earned distinction sixty percent higher. A conscious effort has been made from the outset to capitalize on this advance and to create and nourish the desired atmosphere. A stronger emphasis on the academic phase of college was begun during Orientation Week and pressed throughout the first semester. Members of the faculty and administration systematically addressed the freshman assemblies on the theme; Phi Eta Sigma, the "Phi Beta Kappa" for freshmen, was given special recognition; superior academic achievement has been stimulated by special letters to parents, secondary school principals and home town newspapers. Advanced placement, special sections for the better student and individual reading and discussion programs for selected students have been encouraging in their results.

The effect of the quality point ratio regulation, instituted some four years ago, is making itself felt. It is now operative in all classes. In general, it has stimulated students to greater effort, and it has prevented to a degree the continuation of the obvious misfit. Experience, limited as it is, indicates, however, that the requirements for continuation are too low, especially in the freshman and sophomore years. Too many students by meeting the minimum requirements remain in school through the third year, only to face the impossibility of graduation. They must be dismissed after having invested three years, with readmission and eventual graduation highly improbable.

The regulation is also affecting the readmission of former students, since the staff is forced to review applications in the light of the quality point ratio of the applicant as it relates to the minimum requirement for graduation. It is increasingly obvious that students excluded for academic reasons at the end of the second or third year cannot make up the deficit and should not be readmitted. This places the student in a very difficult position since colleges are becoming increasingly hesitant to admit those who have been dismissed from another institution. The regulation, unquestionably, is contributing to the improvement of the academic climate of the college, but it merits reconsideration in the light of experience.

The number of students interested in foreign study during the junior year or the Summer months is increasing. The practice, commendable as it is, raises the difficult problem of credits. Under the present system, individual cases are reviewed by the appropriate dean, the Registrar, and on occasion by the Committee on Academic Standards. Consideration might well be given to providing means for a continuing evaluation of foreign study.

The staff notes with pleasure improvement in the administration of the Examination in English Usage and in the effectiveness of the Writing Laboratory, which has resulted from the appointment of a responsible member of the English Department as administrator and supervisor of the

Laboratory, the close liaison which has been maintained between him and the Dean's office and the system of individual conferences between student and instructor. In spite of the improved operation, however, the program is still questionable. It merits serious consideration with a view to determining the extent to which the stated objectives are being achieved.

The mechanics of operation are under constant study with a view to facilitating the work of the office and of the departments of instruction. A case in point are the new procedures relating to departmental majors. Under the new system notification of an initial declaration or a change in major is transmitted promptly to the Faculty Adviser, the Director of Undergraduate Studies of the appropriate department, and to the Registrar, and the necessary student records are transferred quickly. Through the cooperation of the Registrar and the IBM Installation, the office is able to furnish each department with a list of its majors, including addresses and academic status, well in advance of preregistration. The plan has contributed materially to the effectiveness of departmental planning and operation with reference to the needs and counselling of majors.

Previous reports have stressed the preoccupation of the staff with student counselling. From September through April of the current year members of the staff have averaged in excess of one hundred fifty formal conferences a month in addition to countless "in-between" interviews. Follow-up action, recording of interview results, and letters to parents appreciably multiply the hours devoted to counselling. The process is costly and time consuming but, in the opinion of the staff, it constitutes a major channel through which the student body may be oriented to a valid academic point of view.

The members of the staff are finding it increasingly difficult to maintain their own academic respectability. Committee meetings, organizational obligations and service to the community at large add their quota to the exactions of counselling and office routine. The administrative load intrudes on time and energy which should be devoted to teaching, research and writing. The necessity of achieving an appropriate balance is obvious; the question of how to achieve it is difficult, and disturbing.

This report is written with full appreciation of the devoted and intelligent service which the assistant deans of Trinity College have rendered to the College and to the University during the past year. It is written with equal appreciation on the part of the entire staff of the cooperation it has received from departments of instruction, the committees with which it is associated, the Registrar, the Dean of Men and other officers of the institution on whom it relies for effective operation. Mutual goodwill and respect have contributed materially to what in retrospect seems to have been a successful year.

ALAN K. MANCHESTER
Dean

THE WOMAN'S COLLEGE

To the President of the University:

This year has been one of creative stirring throughout the University. Challenged by the establishment of the Long Range Planning Committee, the staff of The Woman's College not only again thoughtfully surveyed the physical needs of the plant but also subjected itself to an examination of its internal workings and a study of the ways in which the College, because of its particular relation to the University, can make its best contribution to the University as a whole. It recognizes that a woman's college in a university system should be a strong liberal arts unit, adding to the prestige of the university by the standards of its students in academic work, community service and personal living.

Although women students participate successfully in science and mathematics, their major interests and best aptitudes more frequently find expression in the humanities and social sciences. The Woman's College, therefore, provides a resource for adding strength to the University in these areas. At the present time English and history have the highest number of women majors, but new fields of strong potential leadership for the College are art, the languages and music. It is important, therefore, that provision be made to facilitate leadership in these fields.

Certain things are possible in a smaller unit which are not feasible for the whole. In the first place, the students can be highly selected, and therefore higher academic achievement can be expected. For example, in this College there were 1771 completed applications for entrance to the freshman class of 1958-59, of whom 330 were matriculated. In addition there were 6 former students returning and 34 accepted transfers, bringing the total of new and returning students to 370. These were chosen from a total of 1950 completed applications.

In the second place, in a smaller unit it is possible to reach the entire student body at one time since it is not too large to assemble in one place.

In the third place, more guidance both for organizations and for individuals can be given. The Freshman Advisory Council groups can be kept small, and leadership training can be given each new group of advisers. Other service groups can operate effectively because they are not unwieldy; and personal contacts which are not possible in very large institutions are available. The Houses provide relatively small homogeneous units working together, with the resource of a trained counselor readily available. Leadership is developed through the work of the House Officers, the House Council, and the House Judicial Committee. Furthermore, the Houses are centers for additional cultural enjoyment: one is interested in collecting its own library; several have used the musical talent in the House by giving musicales; others establish a record collection. Although

some Houses have always invited professors to come for discussions with the students, there has been an interesting trend this year toward a more continued investigation of a topic. One House, for example, studied "The Values in the Liberal Arts," holding a series of meetings with professors in various fields to help them survey the values of the field both to the individual and to the world. These were lively free discussions with one student in charge at each meeting. Some other Houses have undertaken programs according to their special interests.

Finally, the house counselors make a major contribution, especially in the area of the intangibles. This accounts in large measure for the spirit of the campus and is both qualitative and dynamic.

All of these advantages, with others too numerous to describe here, make it possible for a college such as this one to develop standards of quality that are important for the university of which it is an integral part.

The In-Service Training Program of the house counselors also has taken the form of evaluating the position in relation to the officials of the College and the University, the faculty, and the total student life program as well as to the students in their own Houses. They envision a two-year study from which they can formulate a handbook for the guidance of future house counselors. This study of the position of the counselor within the University should lead not only to self-understanding and a clearer picture on their part of the functions of other elements in the University, but also to a better understanding of the counselor's role on the part of various other groups. Through this dual clarification the counselor should become better integrated in the University and therefore more able to make a valuable contribution to its quality.

Self-examination for strengths and weaknesses and for relation to the whole has spread to the student body. At first this showed itself in unrest and destructive, often petty, criticism. It has finally crystallized as a wholesome spirit of inquiry expressing itself simultaneously through the Woman's College Student Government Association and the YWCA. This self study will be continued next year, and organizations and committees will attempt to define themselves and their functions to see whether or not they relate adequately to the main objectives of the College and the University.

ACADEMIC STANDING 1958-59

The record of the freshmen has been very gratifying. There were 88, or 26% of the class, who made a grade of B or above in the Fall, and 108, or 33.13%, in the Spring. Of these 49 qualified for the freshman academic honorary (Ivy), which requires 3.25 or above.

The Dean's List for the Fall semester of 1958-59, which is determined by a grade average of B or above earned in the Spring semester of 1957-58, numbered 278, exclusive of the June graduates. The Dean's List for the Spring semester, determined by the record in the Fall semester of

the current year, numbered 334, exclusive of freshmen. The total number with an average of B or above in the Fall semester was 422, approximately 35% of the total enrollment of 1205.

Fifty-two of the 101 elected to Phi Beta Kappa, five of the ten graduating *summa cum laude*, and fifteen of the twenty-eight *magna cum laude* were Woman's College students.

The average for all women students, except special students, for the Fall semester was 2.6681; for the Spring semester, 2.8103. The non-sorority students, exclusive of specials, averaged 2.6796 in the Fall and 2.8376 in the Spring, while the all-sorority average was 2.6614 in the Fall and 2.7943 in the Spring. It is interesting to note that with the return of sorority rushing to the first semester the sorority average again dropped below the all-student average. The senior class had almost a B average in the Fall, 2.9162, and a 3.0495 average in the Spring. The average by class improved steadily from the freshman 2.5337 in the Fall and 2.7014 in the Spring to the senior average. In all classes there was also some improvement over the same period in 1957-58.

Honorary class scholarships awarded on the basis of the five highest averages in each class in the University were awarded to two sophomores, three juniors, and three seniors. Two of these senior women had an all-A average and the other lacked less than one-tenth of a point of this average. A fourth senior who had the average for this award was ineligible because she was already a scholarship holder.

Class Honors based on the year's average of 3.5 or above are held by 11 sophomores, 21 juniors and 29 seniors. These numbers are slightly lower than in 1957-58.

A number of women students enter the "Honors Courses," to which admission is by invitation, and are challenged by the more advanced work whether or not their ultimate achievement leads to graduation with distinction. Of the 45 seniors graduating with distinction in their departments 17 were students in The Woman's College.

There were 230 seniors receiving diplomas in June, 28 of whom completed the requirements for graduation in January. There were 18 September graduates, making a total number of 248 graduates. Of these 237 were candidates for the A.B. degree, 8 for the B.S., and 3 for the B.S.N.E.

SCHOLARSHIPS, LOANS AND WORK

Scholarships were held by 316 women, ten less than for 1957-58. Of these fourteen held special scholarships awarded by The Woman's College: nine Alice M. Baldwin scholars (one of ten recipients withdrew), two Evelyn Barnes Memorial scholars, and one each for Panhellenic, Delta Delta Delta Sorority, and Sandals. Interest in foreign students continues, and in addition to sponsoring the two who are provided for by

annual funds, the Student Government Association has been active in increasing the capital of the permanent Foreign Student Scholarship Fund.

Only 18 women students held loans, but a number were employed in various jobs in order to help pay their expenses. There was, however, a decrease from 1957-58 in the number of those working. In the Fall semester 136 students were employed more or less regularly, and 47 served as substitutes at the House Desks. In the Spring semester 151 students were regularly employed, and 67 served as substitutes at the House Desks.

STUDENT RELIGIOUS LIFE

The report of the Associate Director of Student Religious Life indicates a very thoughtful and creative year in the YWCA. The "Y" has sponsored informal worship and discussion groups in the Houses and several special worship services in The Woman's College Chapel. The "Y" Cabinet made a study in the Fall of *Conscience on the Campus* by Waldo Beach and in the Spring of *A Layman's Guide to Protestant Theology* by William Hornden. In their study they have been assisted by various faculty members. A number of the "Y" committees have done outstanding work, but only four will be mentioned here. The Campus and Public Affairs Committee has held discussions with faculty members and with foreign students and has presented in *The Chronicle* five feature articles under the title "Global Spotlight." The Social Service Committee has again made an important contribution to work in the city and in Duke Hospital. It has organized and kept a record of volunteer work of 118 women students in five agencies. The special Edgemont Committee has organized training meetings with the Director of the Edgemont Community Center, and has made the individual assignments of 39 volunteer workers. The Race Relations Committee has held discussion-lecture meetings with faculty members.

The freshman "Y" has had an active and stimulating year. The Cabinet has held meetings with faculty and staff discussion leaders and has sponsored three meetings for freshman "Y" members with speakers from the faculty discussing topics of current importance. They also provided leadership training for those planning to do volunteer social work and "Seminars" on various topics.

The largest cooperative effort of the "Y" as a whole was that of Parents' Week-end, which was instituted this year in place of Mother-Daughter Week-end. This was a well-organized and successful occasion with 250 mothers, 180 fathers and 75 accompanying relatives registered.

HEALTH

The College Physician reports, "From the point of view of the actual loss of students' time because of illness the record of the past year was exceptionally good." This favorable condition was largely because there were only about one-fifth as many cases of grippe or "flu" as oc-

curred last year. On the other hand, *infectious mononucleosis* more than doubled.

About 18% of the students reporting to the Student Health Service on this campus were admitted to the Infirmary. The number of admissions was 569 for a total of 1300 days, giving an average duration of 2.3 days of hospitalization per student admitted. In addition there were about 150 admissions for minor disabilities of less than 24 hours duration, which totaled approximately 600 hours or 25 days.

There were 49 admissions of Woman's College students to Duke Hospital for a total of 242 days as compared with 48 hospitalized in Duke Hospital for 275 days from April 1957-April 1958.

The total number of students hospitalized in the Infirmary and Duke Hospital was 598 or about half the College enrollment, and the total hospitalization time was 1542 days.

The Student Health Service, operated by the same staff as the Infirmary, averaged 28 visits a day. This is about what could be anticipated under ordinary conditions with the increase of approximately 20% in enrollment. The number of conferences with students on individual health problems increased some 33%.

There has been no increase in Infirmary space or staff to meet the increased enrollment. It continues to be necessary to refer some students back to the dormitory for convalescence and at times to install cots—an unsatisfactory solution and one which seriously overcrowds the wards. A further difficulty in caring for students in The Woman's College is the lack of laboratory service in the Infirmary. If laboratory service is necessary, the student must be transported to Duke Hospital; and even if this does no serious harm to the student, transportation is often difficult to arrange at the time it is needed. The whole procedure is awkward and irritating. At least the part-time service of a laboratory technician and the necessary equipment for her work should be made available.

A welcome move has been made to afford the resident physician some relief from constant strain by the provision of a "relief" physician for one day a week.

MISCELLANEOUS COMMENTS

The anxiety which results from the tight admissions situation in most of the large colleges and universities has been indicated by the increased number of visits to the College by prospective applicants and their parents. The receptionist has done an excellent job in establishing good relations between the College and our visitors and has conducted the tours of the campus during the hours she is employed. In the afternoons this responsibility is assumed by "Sandals," the sophomore honorary, and constitutes one of the most valuable and appreciated contributions among many services to the College.

The operation of a limited experimental plan of admissions with early decision for 1958-1959 was satisfactory and led to consideration of a formal Early Admission Plan. Such a plan has been formulated and adopted for the class which will enter in September, 1960. This plan not only should aid the College to do its part in the national movement to seek out the superior student, but also should reduce the duplication of effort caused by the multiple applications which have become increasingly customary.

It is interesting to note that there were no changes in the order of the states having the highest numbers enrolled in the entering class: North Carolina, Florida, Virginia and New York, with a tie between Maryland and Pennsylvania for fifth place. The order of the religious denominations with the highest numbers was also unchanged: Methodist, Presbyterian, Episcopal and Baptist. Only 10 students have no denominational affiliation.

The appeal of study abroad is growing and seven regularly enrolled students are spending the junior year in foreign universities. Five are in Paris, one at the University of Geneva, and one at the University of Edinburgh. One student who withdrew and who is auditing courses at the University of Geneva is returning to Duke for 1959-1960. Two students went abroad for the second semester, one to study at the University of Tübingen and the other at the University of Geneva. This plan seems wasteful and ill-advised, for by the time one becomes accustomed to life in a foreign country and a different system of education, the term is over.

The student pressure for an academic honor system which finally resulted in a limited and permissive plan to operate at the senior-graduate level has been successful in the 26 classes which voted unanimously to adopt it. The Woman's College Student Government is particularly interested in expanding the plan next year and hopes that eventually Duke students will be ready to undertake the necessary indoctrination and to assume the responsibility of enforcement which go with the privilege of an academic honor system.

The Woman's College Student Forum, an auxiliary of the Student Government, continues to provide a special cultural service to the community by offering several programs of a kind which would not ordinarily be brought to the campus.

There were an unusual number of changes in house counselors last year: one resigned to work toward her doctorate at Cornell, where she was awarded a scholarship; three were married; and one changed to teaching. There was considerable difficulty in filling the vacancies, for we are not on a good competitive basis in salary or additional benefits; but we have been pleased with the replacements. Of the ten counselors now with the College, seven hold the M.A. degree, two are receiving the M.A.

in June, and one, who has exceptional experience for the position, has also done graduate work at Syracuse University.

Under the present conditions, changes in personnel will continue to be likely. In view of this situation the counselors have decided to come to the College for an orientation period of their own preceding the freshman orientation week.

The physical needs of The Woman's College need not be reaffirmed, as they were fully stated in the report for 1957-58 and remain unchanged.

R. Florence Brinkley
Dean

THE COLLEGE OF ENGINEERING

To the President of the University:

The activities of an engineering school are acutely sensitive to the progress in the scientific and engineering economy of the country. The school not only must keep up with that progress but it must anticipate it in its educational programs. Engineering looks always to the future—toward new materials, new devices, new methods, and the education of the engineer must prepare him to look creatively to that future. Throughout the College of Engineering there is ferment, self-examination and experimentation in both the undergraduate and graduate levels, and as engineering and technology change and evolve we encounter a whole range of new problems. Chief among these is what to teach now in preparation for the inevitable evolutionary changes of a decade hence. This brings us face to face, then, with the need to determine those things which will always be basic and enduring, and thus we are forced to change our teaching away from the *art* of engineering to the *science* of engineering. The courses in basic sciences and the engineering sciences must be emphasized, and the purely technological courses (reflecting the engineering *art* of the past), that may be necessary to an industrial career are left to the particular industry to be given as on-the-job training.

Our educational program thus is necessarily a fluid one, and we cannot then answer satisfactorily the question: "Why do you not adopt a curriculum and stay with it?" We cannot afford to remain static, because in engineering practice a static state does not exist; consequently our programs are continually under study as we try to anticipate the technological needs of a decade hence and are subject to change.

Another influence away from the *art* of engineering is the need for versatility. The practicing electrical engineer finds his work crossing that of the mechanical and chemical engineer, the nuclear engineer crosses all engineering fields, the chemical engineer must sometimes practice mechanical and electrical engineering, and so on. In many cases in practice all the discrete branches of engineering merge into one great field without distinction as to subject. This again calls for education aimed at preparation for this general practice, or eventual versatility. Emphasizing in college those things which are basic is the task of curriculum builders, and it is a continuing process. We are committed to a program of development in educational philosophy leading to conservative implementation of some of the newest ideas in engineering education, and that keeps our curricula continuously in a state of flux.

All this ties in with self studies incident to the long-range planning program recently undertaken by the University. These studies have been fruitful and exciting and have led to some serious thinking regarding the

role of a small engineering college which is an integral part of a university. Visits to other colleges and conferences with consultants have helped us to formulate some tangible goals and to show us how we should be headed. The study is by no means complete and is proving to be intensely interesting.

There have been a number of developments during the year. Accreditation of the Mechanical Engineering curriculum was extended for an additional three years. All three curricula are now accredited on the same time scale and have three more years to run on the maximum five-year period.

Arrangements have been made with Wake Forest College for cooperation in the 3-2 program. This brings the total number of cooperating institutions to eight. It is not anticipated that many more will be added. Our first 3-2 student graduated in June, 1959. He came to us from Illinois Wesleyan University and made a creditable record.

National Engineers' Week was observed during the last week in February. The climax was a popular lecture on missiles by General John B. Medaris, commanding officer of the Army Ballistic Missile Agency at Redstone Arsenal. This activity was carried on in cooperation with the Office of Ordnance Research and the professional engineers of North Carolina.

An interesting experiment with in-service counseling is under way by a group of faculty. The group meets weekly for informal conferences with educational psychologists in an endeavor to learn the best approach to the student and how to counsel him without antagonizing him. Because of our long, complicated and arduous programs, counseling becomes an important facet of our operation. Besides freshmen advisors, we have advisors for each class in each department, advisors (or counselors) to each student professional society and a volunteer group of students who act as big brothers to freshmen—all this in addition to the normal day-to-day counseling which goes on in the Dean's office. The in-service counseling group is working on the problems of how to induce the student to seek counsel when it is needed and how to counsel him efficiently once he requests it. This is a fruitful study, and it will pay off in more efficient guidance of our students.

Again we are continuing the interesting Summer cooperative educational program with the Western Electric Company. Selected employees are sent to the campus for four weeks for special high-level educational experiences. This is part of a program for advanced education of potential administrative personnel. To us it has proved to be an interesting experiment in adult education of a high order and has been a distinct challenge to those staff members who participate.

The College of Engineering is experiencing steady progress, but the penalty for this is demand for more space and facilities. This year we have a total of 25 men on a graduate program; next year there will be 50 percent more. Study and laboratory space must be found and, of course, it must be found within the confines of the building. Undergraduate progress makes its demands also. Taken altogether, therefore, some readjustment of available space always will be necessary. What we do will have to fit into the long-range planning, so some careful consideration has been made before our requests have been submitted. Last year's activity was centered on air-conditioning the library, lecture room and some of the offices that will be used during the Summer. The auditorium also was furnished with a new lighting system. Much of the air-conditioning equipment and some cash were donated by interested alumni. This was a worth-while project and is much appreciated.

We are getting under way with a few sponsored research projects. In fact, there is about as much in progress as the present staff can handle with all three departments involved. In Civil Engineering there is work on stresses and strains in doubly curved structures, and basic soil characteristics; in Electrical Engineering, with Physics, work on critical temperature circuitry, and analog computer analysis; in Mechanical Engineering there is work on dashpot analysis and the mechanics of pulses in elastic tubes. Interestingly enough, this last is sponsored by the Center for the Aging, showing a relationship between engineering and medicine. Total sponsorship amounts to $75,000. This compares with $5,000 a year ago.

We never cease to encourage alumni activities. Whenever an engineering faculty member visits a distant city, alumni are first alerted and urged to hold a meeting at some convenient time and place. In this way engineering alumni groups have met in such places as New York City, Washington, Rochester, Cleveland, Detroit, Dallas, Atlanta, Houston, Schenectady, Boston, Berkeley, Denver and numerous North and South Carolina cities. There are definite organizations in Charlotte, Durham and Washington, D. C. There are now 1680 persons on the engineering alumni roster, each of whom is contacted by this office at least twice each year.

Engineering colleges throughout the country experienced a 11 percent drop in freshman enrollment last September, and anticipate a drop again for the class entering in September, 1959. We did not experience any such drop this year, however, and do not anticipate any for next Fall. In fact, our enrollment was up a little this year and may be up again next Fall. Admission of 165 new men per year keeps our facilities crowded to our capacity of 500 students.

The following statistics apply to the 1959 graduating class:

Total graduating	87
NROTC—16; AFROTC—4	20
Married	21
Tau Beta Pi	18
Phi Beta Kappa	12
To Graduate School	20
Number accepting jobs	47
Number of companies recruiting engineers	135
Number of recruiters	212

Again we have experienced a much greater demand for our graduates than we ever can hope to fill. Our reputation is good.

WALTER J. SEELEY
Dean

THE GRADUATE SCHOOL OF ARTS AND SCIENCES

To the President of the University:

Statistics on advanced degrees conferred in 1959 are presented in Appendix I. The conferring of doctoral degrees in September, as well as in June, was carried out in September, 1958 for the first time in the history of the Graduate School. The practice is good and has served well the candidates involved. Enrollment for the Fall semester of the academic year 1958-1959 was 654 and in the Spring semester, 638. These figures represent for each semester an increase over the comparable semesters in 1957-1958 of approximately 125 students. The trend toward increasing graduate school enrollment can be expected to continue as larger classes graduate from colleges and an increasing proportion of these graduates undertake advanced work. The University can accommodate reasonable increases in this area providing the most efficient use of student and faculty time can be arranged for. In spite of reasonable attention to limiting course work in favor of individual study and research, the most effective use of student and faculty resources will remain, for some time, a matter requiring continual study and careful planning.

The Graduate Faculty has recently taken steps to encourage a more rapid completion of requirements for advanced degrees. It is firmly believed that quality performance will not be sacrificed by the changes made and may in fact be significantly enhanced. The essential features of the two reports bearing on this problem are given in Appendix II. These reports, which were based on studies covering the years 1952-1956 and subsequently extended to 1958, were presented by the Committee of the Graduate Faculty on Policies and Procedures. Other areas need study, and when the intensive phase of long range planning is completed, the Committee should make studies of areas bearing on increasing the efficiency and effectiveness of graduate work at Duke University. Some indications as to possible future directions are expected from the Graduate School Committee on Long Range Planning which consists of Professor R. L. Predmore, chairman, and Professors John Tate Lanning and C. K. Bradsher.

The appointment of Professor Francis E. Bowman, formerly Director of Admissions for the Graduate School, to the position of Assistant Dean has recognized the growing size and importance of the task he has performed so well since his first association with the Graduate Office. He handled, with the able assistance of our secretarial staff and Miss Martha Roberts in particular, a volume of applications this year that was greatly expanded in number and variety. In this job as in all the other tasks that fall his lot, the work has been done with dispatch and effectiveness. In addition to serving as Secretary of the Graduate Faculty he has filled this

same position in the Executive Committee of the Graduate Faculty. The Executive Committee has, in its usual form, added good advice and wise guidance to the affairs of the Graduate School. The membership of the Committee for the present academic year is: Professors Clarence Gohdes and Richard L. Predmore from the Humanities, Professors R. Taylor Cole and B. U. Ratchford from the Social Sciences, and Professors Harold W. Lewis and Paul J. Kramer from the Natural Sciences.

It would be out of character for the Dean to close this report without reiterating two of the most pressing requirements mentioned in earlier reports from this office. They are:

1. The desirability, and in a measure the necessity, of taking immediate steps that will lead to the construction of adequate married student housing. We cannot expect to attract some of the most able graduate students without this facility, and our relative position is becoming, almost daily, less attractive because of the lack of adequate accommodations.

2. The necessity of raising the stipends in our regular graduate assistant, scholarship and fellowship award program. We are now offering awards that total approximately what many other institutions pay above and beyond tuition and fees. Within the next several years we can look to a considerable diminution in the quality of our graduate assistants unless corrective measures are taken—for the pressure to obtain teaching assistants, as college and university enrollments increase, will grow beyond anything yet experienced.

Parenthetically it may be noted that a new method for administering graduate assistant award offers was instituted in the spring of 1959; namely, the departments, via the Director of Graduate Studies and the Chairman, made such offers directly after receiving notice of the departmental allocation for such purposes from the Dean of the Graduate School. This seems to be a desirable change and has reduced considerably time consuming communications between the Graduate Office and the departments. It is believed that this method of handling our graduate assistant offers will improve our competitive position, and with more competitive stipends we should be able to increase significantly the quality of our assistant group. Many assistants we now have are here only because of a strong prejudice for work with a particular staff member or for work in one of our stronger departments; a great many of the more able of our assistants have accepted our awards at a significant sacrifice relative to what they might have obtained elsewhere in the way of a stipend.

It is the writer's sincere hope that Dr. Allan Cartter who takes over as Dean of the Graduate School in September of 1959 will find the job as interesting and rewarding as has been the case for the incumbent—and it may be added 'just a little trying' when *no* was necessarily the answer.

MARCUS E. HOBBS
Dean

APPENDIX I

ADVANCED DEGREES AWARDED IN 1959

	Ph. D.		*Ed. D.*		*A. M.*		*M. Ed.*		*M. A. T.*	
	June 1959	Sept. 1959	June 1959	Sept. 1959	June 1959	Sept. 1959	June 1959	Sept. 1959	June 1959	Sept. 1959
HUMANITIES										
Ancient Languages										
English	3				10	7				2
German					3					
Philosophy		1			1					
Religion	3	1								
Romance Languages					1				1	
	6	2			15	7			1	2
SOCIAL SCIENCES										
Economics	2	2			4					
Education			2	1	4		8	17	8	10
History	6	1			7	3			1	2
Political Science	4	3			3	1				
Sociology	1	1			1					
	13	7	2	1	19	4	8	17	9	12
NATURAL SCIENCES										
Anatomy		2								
Biochemistry		2								
Botany	6				2					1
Chemistry	10				5	2				
Forestry										
Mathematics	4				3	3				11
Microbiology					1					
Physics	3	3			1					
Physiology										
Psychology	7	4								
Zoology	3	1			3	2				
	33	12			15	7				12
Totals	52	21	2	1	49	18	8	17	10	26

Total Number Doctoral Degrees— 73
Total Number Master's Degrees—128

APPENDIX II

Upon recommendations by the Committee on Policy and Procedures, the Graduate Faculty on April 17, 1958, and January 10, 1959, adopted new regulations aimed in general to reduce delay in completing requirements for master's and doctoral degrees. In brief, they are as follows:

The Unit. The cumbersome term *semester hour* will be altered to *unit*. Tuition and fees combined will be computed at $26 a unit.

The 60-Unit Doctoral Program. *Minimum* residence for the doctoral degree will be 60 units, of which not more than 30 may be accepted by transfer.

Minimum Registration. Unless terms of appointment indicate otherwise, resident students will register for a full program of 15 units (maximum 16) until master's candidates complete residence requirements and doctoral candidates pass preliminary examinations. Thereafter, if they remain in residence, they may reduce registration to a minimum of 3 units, required for eligibility for Student Health service; if they go out of residence before a required thesis or a dissertation is submitted and accepted, master's candidates will register for 3 units for the semester in which the thesis is presented and doctoral candidates will register for 1 unit a semester *in absentia* through the semester in which the dissertation is submitted and accepted.

Time Limitations. Master's candidates who are in residence for consecutive semesters should complete requirements within two calendar years and all master's candidates must complete requirements within six calendar years. Doctoral candidates should complete language requirements within the first year; should they fail to do so within the first three semesters, they must register in the appropriate language courses. They should complete preliminary examinations by the end of the second year, must show the Dean cause for delay beyond the middle of the third year, and may not—except for valid reasons such as military duty or serious illness—delay beyond the third year. The dissertation should be submitted and accepted within two calendar years after preliminary examinations are passed. If delay exceeds four years after preliminary examinations are passed, the candidate must petition the Dean for an extension of one year. Should the delay exceed five years, the candidate must pass a second set of preliminary examinations.

Time Limitation on Fragmentary Credits. Any courses, language certifications, or other credits for advanced standing which are more than six calendar years old at the beginning of the semester in which preliminary examinations are passed will not be accepted toward fulfilling the minimum requirements of the doctoral degree.

Effective Date. These regulations will apply to all students who first register in September 1959 and thereafter. With approval of program supervisors current students may elect to accept them in full.

THE DIVINITY SCHOOL

To the President of the University:

INTRODUCTORY

The Reverend Doctor James Cannon resigned his duties as Dean of the Divinity School September 30, 1958 after eight years of unremitting administrative leadership. Called to assume the responsibilities of Acting Dean, on the resignation of the Reverend Doctor Harold A. Bosley in the Spring of 1950, Dr. Cannon was elected Dean March 1, 1951. With his resignation, he had completed forty years of faithful service to Duke University and thirty-three years of uncommonly devoted self-giving to the Divinity School. On October 1, 1958, on election of the President and the Board of Trustees, I assumed the duties of the deanship.

I stated at the beginning that the Divinity School, like other institutions of comparable nature, has some history to stand upon, some history to overcome, and some history to make. In the course of remarks to the Faculty assembled in regular meeting October 9, 1958, I indicated certain principles I regarded as guiding for my administration. Among them, that the *status quo ante,* in the work and conception of the task of theological education, would be considered but not considered decisive; that the relation between the Methodist Church and the Divinity School has been and would continue to be both vital and fruitful but that, at the same time, we intended to be ecumenical in theological perspective and where desirable, in the composition of our faculty; that, as a theological faculty, we aspired to be a college of scholars and teachers concerned both for scholarly excellence and a superior preparation of students for Christian churchmanship and not for mere ecclesiastical preferment; that, in the administration of the affairs of the school, the formulation of policy and the appointment of faculty democratic process was to be expected and, commensurate therewith, no doubt weightier responsibilities upon the faculty in these provinces; finally, that the justification for this administration would not be by impeccable procedures, faultless maneuver, or even by works, but by faith. We are proceeding on these lines.

ENROLLMENT

Enrollment in the Divinity School for the year 1958-59 is somewhat in advance of that for 1957-58. The total Divinity enrollment for 1958-59 is 263 as compared with 250 students for the preceding year. In the graduate division of Arts and Sciences in Religion, the enrollment is 36 as compared with 25 students for 1957-58. This gives a total of 299 students in candidacy for the degrees of B.D., M.R.E. and Ph.D. or M.A. Due to justifiable pressures for increasing numbers of trained ministerial candidates and the enlarging national prestige of our B.D. and graduate

programs, we must, I believe, anticipate an enlarging enrollment year by year over the coming decade. A convenient tabulation of our enrollment with denominational "break-down" is offered.

ENROLLMENT
1958-59
(Summer Sessions 1958 Included)

Denomination	*Divinity*	*Graduate*	*Total*
Methodist	238	9	247
Presbyterian	5	7	12
Baptist	5	11	16
Congregational Christian	10		10
Disciples of Christ	2	2	4
Nazarene	1		1
Church of Brethren	1	1	2
Pentecostal Holiness	1		1
Church of Christ	1		1
Evangelical United Brethren		1	1
Evangelical Lutheran		1	1
Episcopal		1	1
Mennonite		1	1
Seventh Day Adventist			
	263	36	299

GEOGRAPHICAL DISTRIBUTION

North Carolina, 118; Virginia, 37; South Carolina, 19; West Virginia, 16; Florida, 13; Mississippi, 11; Tennessee, 10; Kentucky, 9; Alabama, 9; Pennsylvania, 7; Texas, 7; New York, 6; Arkansas, 4; Georgia, 4; New Jersey, 4; Oklahoma, 3; Ohio, 2; California, 2; Missouri, 2; Japan, 2; Kansas, 2; Louisiana, 1; Iowa, 1; Massachusetts, 1; Montana, 1; Maryland, 1; Washington, D. C., 1; Michigan, 1; Connecticut, 1; Philippines, 1; Norway, 1; Germany, 1; Argentina, 1.

States: 28
Foreign Countries: 5

CURRICULUM REVISION

It has for some time been apparent to our faculty that the course of studies prescribed for the B.D. degree was in need of careful study with a view to its revision in the direction of greater usefulness and that, in particular, the field of practical or professional studies required general assessment on the ground of what is indispensable for instruction of students in good churchmanship. Studies of the "Niebuhr Report" on the state of Theological Education at Mid-Century provided a background against which the faculty—beginning with the practical disciplines—undertook a revision. After prolonged and careful deliberation, a revised curriculum was adopted March 24, 1959, the first academic year of which will be

instituted this coming Fall. Distinctive features of the new curriculum are the introduction of a succession of "professional courses" regarded as providing indispensable matter for the student's professional preparation. These run through the first five semesters of the student's course. In addition, there is a certain enlarged requirement in the classical theological disciplines, both historical and systematic. It is planned that most of the "professional courses" will require the collaboration of two or more professors.

SHORT AND LONG RANGE PLANNING

The Dean of the Divinity School has already, in collaboration with his colleagues, submitted to the University Committee on Long Range Planning a prospectus. This includes a fairly comprehensive forecast of the direction in which we ought to go in faculty recruitment and the rounding out of a comprehensive and balanced program of theological studies. Some progress has been made this year through crucial appointments to our faculty, some other aspects must wait larger resources and available personnel. Study has made three considerations plain: One, that our program for Master's of Religious Education requires enlargement in light of the enormous and unsatisfied demand for such trained persons. Secondly, we have in the context of the University and related and adjacent institutions the capacity to develop a much enhanced and even nationally significant program in Pastoral Care and Religion and Mental Health. Thirdly, we are studying the inauguration of an advanced professional degree, the Master of Sacred Theology, as a step beyond the B.D. and as providing for specialization by qualified students in both the theological and the applied disciplines.

A report such as this should not omit reference to our pressing need for more adequate space for instructional, work-shop, and library quarters. We have for sometime been compressed within physical limitations which have become distressing and are now acute. We have outgrown our library and our chapel. We have no common-room for the life of the Community. We administer the large work of the Rural Church under The Duke Endowment for which we have pitiful and inadequate quarters to properly receive, almost daily, delegations of persons from every part of the State. I am therefore obliged to indicate that we cannot support our present program, students, faculty and administrative personnel or contemplate, as we must, an enlarging enrollment without anticipating immediate additional space and, shortly, a building program.

FACULTY AND ADMINISTRATION

The following faculty members will have terminated their services to the Divinity School at the end of the current academic year: Dr. William H. Brownlee, Associate Professor of Old Testament; Dr. Russell L. Dicks, Professor of Pastoral Care; Dr. A. Durwood Foster, Associate Professor

of Theology and Philosophy of Religion; Dr. Vergil E. Queen, Associate Professor of Church Administration; and Dr. A. John Walton, Professor of Church Administration and Director of Field Work.

These men go to other fields of labor after significant contributions to teaching and scholarship during the period of their service to the Divinity School. Dr. Walton retires after a life-time of conspicuous labor for the Church in the area of rural life. With unbounded energy, good will and tireless attention to a threefold task, he has for eleven years, discharged with remarkable fidelity and creativeness the work of teacher, administrator of field work and scholarship aid, as well as that of advisor to local churches in the allocation of monies under The Duke Endowment. We wish for each of these men enlarging life and fruitfulness in the tasks of church and school.

We are bringing to the faculty by appointment effective for the academic year 1959-60 the following teachers and scholars: Dr. Egil Grislis, Assistant Professor of Historical Theology; Dr. Richard A. Goodling, Associate Professor of Pastoral Theology; Dr. Stuart C. Henry, Associate Professor of American Christianity; Dr. Frederick L. Herzog, Associate Professor of Systematic Theology; Dr. Hans J. Hillerbrand, Assistant Professor of Modern European Christianity; the Reverend Mr. O. Kelly Ingram, Associate Professor of Applied Theology and Associate Dean of Students; Dr. Thomas A. Langford, Lecturer in Theology; Dr. William H. Poteat, Associate Professor of Christianity and Culture; Dr. Guy H. Ranson, Visiting Associate Professor of Christian and Social Ethics; Mr. Orval Wintermute, Lecturer in Old Testament; and the Reverend Mr. Harmon Smith, Assistant to the Dean. Mr. Donn Michael Farris, Librarian of the Divinity School since 1950, is promoted to the rank of Assistant Professor of Theological Bibliography.

This year I have undertaken to reorganize the faculty committee structure of the Divinity School. This includes the restructuring of existing committees and the introduction of others for which we have urgent need. The latter category includes a Committee on Policy and Appointments. This committee, composed of four full professors and one associate professor, has been of invaluable help to the Dean in arriving at cogent selection of the large number of personnel appointed the current year. Its work has been outstanding, its advice highly esteemed. Other committees initiated are: a Committee on Scholarships and Financial Aid, Student Life and Professional Qualifications, a Faculty-Student Committee on Community Life, and a comprehensive committee bringing under one head the administration of Lectures and Public Events.

During the forthcoming academic year Professor James T. Cleland will be on sabbatical leave for study at home and in Europe. Professor Creighton Lacy will be on sabbatical leave, and, under Fellowship Grant of the American Association of Theological Schools, will engage in study

and research on Indian religious life in India. Professors W. Arthur Kale and John Rudin have been on sabbatical leave for the Spring Semester, 1959. Professor Kale has been on an extensive mission of study of the practical disciplines in theological institutions both in the United States and Britain as a part of our program of long-range planning.

RETROSPECT

I have given a sample of the kind of activity which has engaged the Dean and Faculty of the Divinity School since October, 1958. It is only indicative. There have been significant meetings between the Dean and assemblies of students relative to curriculum, community life and student-faculty relations. A number of frank inquiries and conversations with the officers of the Student Body Association under the able chairmanship of Mr. William Lane have issued in the new Student-Faculty Committee on Community Life.

Somewhat less welcome events relate to *The Christian Century* issue of March 25th which carried an editorial entitled "Duke Divinity School Denied Integration." Another appeared in *Christianity and Crisis* April 27th from the pen of one of the most responsible theologians of America today entitled "Duke University and Desegregation." The editorials contained no factual material either inaccurate or unfamiliar to our faculty. They did give embarrassing publicity to our situation in the Divinity School—a situation which, regarded by sister institutions as anachronistic, not only challenges our otherwise just claim to national as well as regional leadership in theological education but is actually proving a serious obstacle to retaining and securing men of high caliber for the faculty of the Divinity School at this time.

On behalf of the Faculty and for myself as Dean, I wish to express hearty appreciation for the ready and careful attention which has been given the developing affairs of the Divinity School during recent strenuous months by both Vice-president Gross and the President of the University. This has made an otherwise impossible task possible.

ROBERT E. CUSHMAN
Dean

THE SCHOOL OF LAW

To the President of the University:

I have the honor to present the following report for the School of Law for the year 1958-1959.

ENROLLMENT AND GENERAL STATISTICS

One hundred and fifty-two students registered in the School at the beginning of the 1958-1959 academic year as compared with 130 for the year 1957-1958 and 126 for the year 1956-1957. Enrollment for 1958-1959 was divided by classes as follows:

First Year	70
Second Year	38
Third Year	39
Special Students	4
Graduate Students	1

Sixty-nine colleges and universities were represented in the student body. Students came from a majority of the states and one foreign country. There were forty students from the state of North Carolina and seventy-four from the Southern group of states, including North Carolina. There were thirty-eight recipients of the LL.B. degree in June, 1959. Two graduate degrees were awarded this year.

The current year's enrollment is the highest since the "veterans' bulge" subsided with the class that entered in the Fall of 1948 and was graduated in 1951. The size of the class that entered this year marks, it is believed, a reversal of the downward trend that began in the Fall of 1950.

The reversal is due to many factors: the stepped-up activity in our contacts with sources where student applications for admission originate; the full impact of the brochure, "Studying Law at Duke," which was printed in the Spring of 1958 but which did not really make itself felt with respect to applicants for the Fall of 1958; and the expanded program of scholarships made available to Duke law students by a far-sighted policy on the part of the University's Administration.

Even more significant than the increased enrollment in this year's new class is the quality of the entering students. The average Law School Admission Test score for the entering class was 38 points higher than that of the previous class, which gives the entering class about a 12-percentile higher grouping than the previous class. Correspondingly, the average college record of the entering law students was substantially above that of previous classes.

PROSPECTIVE ENROLLMENT—QUANTITY AND QUALITY

As of this writing, the class which will enter in September, 1959 will be still bigger and better. In the face of an unprecedented flood of applica-

tions, the decision was made to hold the entering class to 75 students. Basing ourselves on prior years' percentages of student acceptances of our offers of admission, we sent notification of admission to well over 100 selected students by April 1st of this year. We were then surprised by an unanticipated percentage of acceptances. Consequently, we are having difficulty in keeping the class down to 75. Indeed, as of this writing, the entering class has already reached the planned limit, despite our careful selectivity. The average Law School Admission Test score of the students who have indicated their intention to enter next Fall is about 25 points higher than even this year's high-caliber entering class. Even if this rate of increase in quality levels off, it is the belief of the Faculty that our prospects for the future assure the Law School of one of the chief ingredients for the making of a great law school, a top quality student body. From present prospects, it appears that perhaps 42 of the new students will be from the South, of whom nearly one-half will be from North Carolina.

A YEAR OF MANY EVENTS

This has been an eventful and fast-moving year in the Law School. Among the many events that have characterized the year the following are particularly notable:

1. The creation of the World Rule of Law Center.

2. The addition of new men to the Faculty: Professor Arthur Larson (also Director of the World Rule of Law Center) and Assistant Professor Paul Hardin, as well as the temporary appointment of Visiting Professor Wallace McClure.

3. The appointment, beginning with the forthcoming academic year, of Professor F. Hodge O'Neal, at present Professor of Law at Vanderbilt University.

4. The plans well underway for eventual researches in the field of small business, in anticipation of the addition of Professor O'Neal, with his special qualifications as research director.

5. The engagement of Professor Hans W. Baade, now at the University of Kiel, to handle courses in comparative and international law, beginning with the second semester of next year.

6. The holding, in April of this year, of the Family Law Conference, attended by representatives of diverse disciplines.

7. The closing of the Legal Aid Clinic and the start of projects to fill some of the *lacunae* left by that closing.

8. The appointment of highly qualified practitioners as special lecturers for the current year in certain technical fields of law where the practical experience of the lecturer is particularly effective.

9. Long-range planning for the future of the School, crystallized in reports to the University Committee on Long Range Planning, including close attention to the requirements of physical quarters.

10. The almost complete reorganization of the secretarial staff.

11. The addition of an Assistant to the Dean.

12. The increased range of activities coordinated with other departments of the University.

13. The marked increase in faculty writings and activities beyond those immediately concerned with class room performance.

14. The expansion of the *Duke Law Journal* from a semi-annual periodical with only student writings to a quarterly with contributions from all branches of the legal profession.

In addition, it may not be an exaggeration to say that an apparently new "image" of the Duke Law School (to use Madison Avenue terminology) is under way in the public mind, as evidenced for one thing by the unprecedented flood of applications for admission to the School.

PUBLICATIONS

During the current fiscal year the following symposia will have appeared in *Law and Contemporary Problems:* Sentencing; Crime and Correction; Small Business; and State Trading.

The *Journal of Legal Education*, inaugurated in 1948-49, which is the official organ of the Association of American law schools, continues to be edited for the Association by members of our Law Faculty. The *Journal* has proved to be of great value to legal education and has earned a highly respected position among law teachers.

The *Duke Law Journal*, a student-edited venture in its ninth year of publication, has successfully made the transition to a quarterly of standardized law review format. In addition to student notes and comments, it now also carries leading articles by distinguished scholars and practitioners. Thus, it enriches the body of professional literature as well as provides a valuable medium for student research and writing. Its reception by the legal profession has been gratifying, and it promises to achieve an enviable position among the law reviews of the country. Many of the members of the faculty have been most helpful in getting the reorganized *Journal* off to a good start by contributing outstanding researches of their own for publication and by suggesting topics for student research.

THE CLOSING OF THE LEGAL AID CLINIC

With the close of the current year, Professor John S. Bradway reaches the age of retirement. Since his coming to the Law School in 1931, Professor Bradway has been Director of the Legal Aid Clinic, of national and international fame. During this period Professor Bradway, by his writings, experiments and dedication, easily became *Mister Legal Aid Clinic* of the law school world. His Clinic was used not merely to render legal services for the indigent but also as a vehicle for combining the broad theoretical training provided at Duke Law School with highly pragmatic

instruction in the crafts of the skilled practitioner. It became evident, early in the current year, that to secure a worthy successor to Professor Bradway was out of question. Rather than maintain the facade of a legal aid clinic without the content furnished by the unique attributes of Professor Bradway, it was decided to abandon the legal services to the indigent, which in turn meant abandonment of that type of client as the focal point for instruction in the crafts of the practitioner. This does not mean, however, that instruction at Duke Law School will in the future be limited, as at many law schools, to the traditonal theoretical pedagogy of the class room. Particularly under Professors Bryson, Hardin and O'Neal (but by no means limited to them), plans are underway, through special seminars and otherwise, for systematic practical instruction in medico-legal problems, tactical steps in litigation, corporate planning and drafting, estate and tax planning and other areas; in effect, the "skills" tradition of the Legal Aid Clinic will be maintained, and the wealth of raw material which it has collected over the years will be tapped to achieve even an expansion of the integration of the theoretical with the practical in legal pedagogy at the Duke Law School.

SPECIAL LECTURERS

The School was very fortunate during the current year to engage as special lecturers in certain technical and practical areas of law three outstanding practitioners whose daily work brings them in close contact with the theories and practices of their legal specialties. Mr. Warren Stack, of the Charlotte, N. C. Bar and of the Duke Law Class of 1941, who has had intensive practice in personal injury litigation, conducted a course in "Case Studies," involving problems of tactics and strategy in such litigation. Mr. David Rabin, of the Greensboro, N. C. Bar and also a Duke Law alumnus (Class of 1951) lectured on Patents, Copyrights and Trademarks. Mr. Douglas Orr, of the Legal Department of Burlington Industries, participated with Dean Latty in giving the course on Securities Regulation, for which activity Mr. Orr is particularly fitted by virtue of his years of work with the Securities and Exchange Commission.

LAW LIBRARY

As of May 1, 1959, there were approximately 110,000 volumes in the Law Library. Although this Law Library is not, according to reported figures, the largest in the South in number of volumes, lawyers who have used the various libraries report that the Duke Law Library seems to be the best "working library" in the South.

Nevertheless, the rate of annual acquisitions at several Southern law schools currently exceeds Duke's and, as mentioned later in this Report, an expansion of Library facilities is one of our current problems.

SCHOLARSHIPS

The present first-year class is the first class to receive the benefits of the recently established Southern Scholarships. These scholarships, which grant to students from certain Southern states the cost differential between costs at Duke and in the home state, enable a sizable group of highly qualified students to attend Duke Law School. Twelve members of the first-year class received these awards for the current year.

General Scholarships, ranging from bare tuition to several hundred dollars above tuition, were granted to 31 students in attendance during the current year; by classes this breaks down to 10 for the third-year class, five for the second-year class and 16 for the first-year class.

Regional Scholarships, amounting to $1,000 each, were awarded, as usual, to five first-year students. A like number of awards originally made to members of the present second and third-year classes fell, for the current year, to three awards to the second-year class and one to the third-year class.

LAW DAY

On Saturday, May 2, 1959, Duke Law School and the Duke Law Alumni Association observed Law Day U.S.A. Approximately two hundred fifty alumni and students attended the exercises and participated in the activities.

On Saturday morning Mr. Emile Z. Berman, of New York City, one of the nation's outstanding trial lawyers, conducted a "workshop." A golf tournament, pairing alumni with law students, was held on the Duke course during the afternoon, followed by a social hour at the home of Dean and Mrs. Latty. The dinner meeting held in the Union Building on West Campus was featured by an address by George V. Allen, Duke alumnus and Director of the United States Information Agency.

One highlight of the dinner meeting was the presentation of the portrait of Professor John S. Bradway, who is retiring at the end of this year after twenty-eight years of distinguished service as a member of the Law School faculty. High tribute was paid Professor Bradway by Joseph O. Tally, Jr., who presented the portrait, and by President Edens, who acccepted it. The portrait, by Durham artist Primrose Paschal (wife of Professor Paschal of the Law School), will be hung in the Courtroom of the Law Building.

Law Day U.S.A. was inaugurated by Presidential proclamation in 1958. It has become a day on which the people of this country may reaffirm their faith in the rule of law as the best safeguard of human freedom and dignity. We can say with pardonable pride that Law Day exercises at Duke Law School both last year and this year were of the highest order. Every effort will be made to keep this occasion on such a high plane.

WORLD RULE OF LAW CENTER

The World Rule of Law Center can be said to have started on September 15, 1958, when Professor Arthur Larson came to the faculty of the Law School and assumed his duties as Director of the Center.

The purpose of this Center is to advance the objective of getting legal rules and procedures accepted and used in the settlement of international disputes, including disputes that threaten world peace. It aims to do this by maintaining a nucleus and clearing-house for ideas, activities and research that will advance this goal.

Obviously in the few months that have elapsed since its creation, the Center has not developed its full stride. It started on a modest scale, with the director and one secretary. In November, 1958 the Center engaged Dr. Wallace McClure as Consulting Director. Dr. McClure is well known for a number of books on international law and international economic affairs. Probably the best known is *International Executive Agreements*, the book which established the legality of non-treaty international agreements.

With the assistance of a grant from the Mary Reynolds Babcock Foundation, the Center has also engaged Dr. Hans W. Baade, who is a specialist in both comparative law and international law. Dr. Baade is a graduate of Duke Law School and is now at the University of Kiel in Germany. He will join the staff at the end of the first semester of the coming year. Meanwhile, he is doing research on special topics assigned to him by the director.

The Center, under another grant, has embarked on an interesting project entitled "Illegal Propaganda" to explore the possibility of a legal approach to the problem of inflammatory propaganda leading to a possible breach of world peace. Portions of this project have been delegated on contract to leading scholars in the field of Civil, Common, Islamic, and Soviet law. Another of the Center's activities is the sponsoring and underwriting of a fundamental text book on the subject matter of its operations. This book is entitled *World Legal Order* and was written by Dr. McClure. It is scheduled for publication in September, 1959.

The Center has also produced an over-all "Design for Research on International Rule of Law," which sets forth 34 separate projects, analyzes their significance, status, and proposes a specific way of undertaking the research. Formal applications for foundation support for the highest priority items in the list have already been submitted.

As a result of the establishment of the Center, a course in "World Law" is now being offered at the Duke Law School, with both Dr. McClure and Mr. Larson participating. Registration for the course has been good, and it is felt that the course will constitute an interesting pioneering effort in evolving a new concept of world law, suited to today's needs. Next year it is hoped that, with the return of Dr. Robert Wilson, we shall

be able to offer the regular course in International Law, the new course in World Law, a course dealing with a traditional area of law school study but presented from a comparative law point of view and (scheduled for the Fall semester of 1960) a course in International Law of Trade. The Center, then, already has begun to make a significant impact on the school's curriculum.

SOME SPECIAL NEEDS OF THE LAW SCHOOL

One continuing need of the Law School is further to close the gap between faculty salaries here and at other national law schools and to revise substantially the salary scale of non-faculty members of the law school staff. In saying this, I do not mean to imply that our situation is desperate. Indeed, we have considerably closed that gap over the past two years. This year, for instance, the School successfully fought off an all-out attempt by another top-flight law school to get one of our promising young faculty men away from us; but it must be admitted that our success lay not in meeting the competition dollar for dollar but in convincing the faculty man in question of the hopeful future of the Duke Law School. Although we have come up fast in the last few years, other schools have not been standing still nor have they failed to look to the future, according to our information. One Dean of a leading Northeastern law school tells us that in a few years he expects to pay, for professors of outstanding ability with national renown through their writings, a salary equivalent to that of federal district judges.

One of the biggest headaches of Duke Law School administration in recent years has been the inadequacy of secretarial assistance, particularly in view of the current tempo of the school's activities. Inadequate secretarial salaries have been a chief source of this difficulty.

The Law School's need for greatly expanded physical quarters, especially in view of the school's expanded activities, actual and prospective, has been aired so often that it would be mere wasteful repetition to set forth the details of those needs in this Report. Suffice it to say that considerable time and thought have been given to the problem this year by the Dean and a committee of the Law Faculty.

The time has come to make a complete reappraisal of our Law Library's inadequacies in the light of developments in the realm of law over the past 20 years and in the light of the school's stepped-up activities. Perhaps this can be co-ordinated with the authorization of new physical quarters for the Law Library. The day-to-day maintenance of the Law Library has required the full time and energies of our limited Library staff. What is needed is an outside expert who can come to the school for a period of, say, one semester, to make a careful examination and recommendations. Thought has been given as to who might be invited to do this job.

In the Law Library, again as elsewhere, the staff's salary scale needs revamping, particularly since the staff is underpaid even by the standards of other law schools in the area, not to speak of the standards of librarianship in the national law schools.

Much of the recent success in attracting a student body of adequate size and superior quality can be traced to the scholarships generously made available to the Law School. However, even if the other national law schools were to stand still, we would find it difficult to meet their competition for the really top quality law student. Time and again this year we have been forced to confess to an applicant with a Phi Beta Kappa record and a 90 percentile law aptitude test score that we could not come even close to the scholarship offer which he has received from another law school. Meanwhile, the Dean of a Northeastern national law school tells us that within ten years he knows for a certainty that he is going to have $300,000 a year to pay out in scholarships. When that happens we fear that most of the really heavy cream we now get will be skimmed off to that school and to its nearby competitors who will be spurred to similar efforts.

Time, thought and efforts soon will have to be given by the Law School administration to fund raising, especially in view of expanded activities like the World Rule of Law Center, the small business research program, etc.

FACULTY ACTIVITIES

As in the past I am submitting in some detail a list of the activities of the faculty. Because of its length it is inappropriate for publication. However, the record is an impressive one, and indicative of significant scholarly and professional services rendered. This has been an unusually good year of productivity for the faculty; some two dozen articles and six books have been published, and others are in process.

E. R. LATTY
Dean

THE MEDICAL CENTER

To the President of the University:

This is the twenty-ninth annual report of the activities of the Duke University Medical Center, including the events during the year, the statistics of the medical, postgraduate and nursing students, and of patients, and last but not least a list of our most urgent needs.

April to me is the saddest month of the year, not only because it brings me another birthday and the task of writing this report, but chiefly because the Medical Center budget must be balanced. This year is particularly difficult because the Medical School, as well as the Hospital, need much more than we had last year just to maintain our present standards without raising them.

Medical School costs: The very welcome increase in the Medical School Operating Fund raised by Mr. C. A. Dukes from the Medical Alumni in connection with the Loyalty Fund was a great help in planning the budget, but we were still short.

The following letter from Dr. Willard C. Rappleye, President of the Josiah Macy, Jr. Foundation, made possible the greatly needed salary increases in the preclinical departments:

> It is a great pleasure to notify you that our Board of Directors today voted unanimously to make an unrestricted grant to Duke University School of Medicine in the amount of Fifty Thousand Dollars, ($50,000) annually for a period of three years beginning July 1, 1959 and ending June 30, 1962. We shall make payments semi-annually starting July 1, 1959.
>
> The purpose of the grant is to give you some help in stabilizing the teaching-research staff during the next few years, particularly in the basic medical sciences. We shall be glad to have a report at the end of the period of the use to which the funds have been put. We hope that this contribution will be helpful.

But even with the increased and very welcome contributions from the Alumni, and this life-saving grant from the Macy Foundation, as well as other gifts, the only way in which the 1959-1960 Medical Center budget could be balanced was by raising the tuition to $1200 for the nine months year, a decision which was made with great reluctance. Even $1200 is only the average tuition for the better medical schools, and furnishes less than one quarter of the operating costs.

Student loans: It is hoped that the Angier B. Duke Memorial and other loan funds will enable all of the students to continue in school. During the past twenty-nine years, no medical student has had to drop out for financial reasons, but there have been many close decisions. In 1957-58, 46 medical students borrowed $39,915, and during 1958-59, 54 loans were made for a total of $53,935. The loan fund set up by the faculty and alumni of the Medical Center in memory of Frank and Elizabeth Swett has met several emergencies when medical students were economizing too rigidly on food.

Hospital costs all over the world have risen so that it is impossible for individuals of average income to be ill without Blue Cross Hospital Care insurance, and even that pays only part of the bill. Efforts are being made through the Duke Medical Center Fund to raise money to reduce the deficit and if possible to furnish hospital care at lower rates. The per-diem cost for patients in Duke Hospital has risen from a low of $3.81 in 1933 to the present $24.55. However, with a decrease in the average length of stay due to the scientific advances which have occurred, the cost per-hospital-stay to the patient has not risen in the same proportion as has the per-patient-per-day cost.

The increasing size of the house staff and of the number of fellows (from 197 in 1948 to 260 in 1959), some supported by the Medical Center and others by outside grants, have reached a critical point at which a decision must be made about placing all of these individuals on a cash basis. Formerly, as in most medical centers, the members of the house staff received board, room and uniforms (in my day we furnished our own uniforms and equipment), and a small monthly stipend. The present cost to the Medical School and Hospital for this service is $365,202. Now that most of these physicians and surgeons are married, salaries and housing allowances are necessary, and additional apartments are needed within walking distance of the Medical Center. Thanks to Mr. Edwin L. Jones and his Poplar Apartments, the situation has been met so far, but the rising percentage of marriages among the medical students as well as the house staff will require additional facilities. For example, 38 per cent of our medical students are married (21 per cent among the first year students and increasing to 57 per cent among the seniors). Fortunately 73 per cent of these wives work, or else the Medical Center would be even more inadequately staffed with secretaries, technicians and nurses, and the number and amount of student loans would be greater.

The Postgraduate program under the direction of Dr. William M. Nicholson has continued to be successful, not only for the physicians in attendance but also for the public relations of the Medical Center. In addition to the following courses, Dr. Nicholson has conducted annual Medical Postgraduate cruises to the Caribbean or to Europe:

MEDICAL POSTGRADUATE COURSES, 1958

Subject	*Date*	*Number in attendance*
Electrocardiographic Review, Advanced	Jan. 21-23	33
Gastro-Enterology	Feb. 10-14	86
A Review of Rheumatic Diseases	Mar. 10-11	32
Postgraduate Course in Isotopes	Apr. 28-May 16	6
June Postgraduate Course	June 16-19	35
Mycology Course	July 1-31	25
Course in Fractures	Oct. 4	21
The Physiological Basis of Internal Medicine	Oct. 13-17	94
Course in Pediatrics	Oct. 28-30	62
Utilizing Neurophysiological Phenomena in the Treatment of Hemiphegic Patients	Nov. 20-21	85
		479

With the financial help of the Lederle Laboratories Division of the American Cyanamid Company, Mrs. Charlotte Troutwine, Miss Frances Thomas and Dr. Nicholson are compiling a monthly schedule of all of the postgraduate activities in North and South Carolina and Virginia in a brochure entitled "What Goes On" which is mailed from the Medical Center to the 10,000 physicians in these three states.

Library: Miss Judith Farrar, the librarian of our Hospital Library, Mrs. James H. Semans, chairman of the Library Committee, and the members of the Library Committee with the help of Dr. Sanford V. Larkey, librarian of the Welch Medical Library at the Johns Hopkins School of Medicine, have completed a survey of the present and future needs of the Hospital Library.

Buildings: As indicated last year, plans for a cobalt and radiologic therapy wing to the Hospital have been completed, and bids were opened 7 May 1959. All of us are grateful for the funds granted by The Duke Endowment and the North Carolina Medical Care Commission which will make this structure possible.

An appropriation of $388,000 has been made on a matching basis by the National Institutes of Health toward a building for the research program on aging, and efforts are now being made to raise the money needed to start the project.

Faculty changes: The Medical Center has a quintuple obligation: (1) the instruction of medical students, (2) the training of the house staff, (3) the provision of opportunities for the keen younger members of the faculty to progress to professorships here and elsewhere, (4) the adequate care of patients, and (5) research; though not necessarily in that order of importance. That the third mission has been accomplished during the past year is indicated by the appointment of six members of the Duke faculty to professorships: John B. Hickam in medicine at the University of Indiana; George Margolis in pathology at the Medical College of Virginia; James V. Warren in medicine at the Galveston Branch of the University of Texas; William H. Knisely in anatomy at the new medical school of the University of Kentucky; George Schwert in biochemistry at Kentucky; and Joseph B. Parker in psychiatry at Kentucky.

Assistant Dean Kenneth E. Penrod has accepted the vice-presidency in charge of medical affairs at the University of West Virginia. Two new assistant deans have been appointed in recognition of their accomplishments for the past fifteen years: Joseph E. Markee in charge of admissions, and William M. Nicholson in charge of postgraduate instruction.

In most medical schools, the chairmanship of a department is a permanent appointment, but seeing the benefit to the pediatric department produced by my resignation of the chairmanship in 1954 and the appointment of Dr. Jerome S. Harris as chairman, three other department heads have

followed suit—Dr. Smith in microbiology, Dr. Forbus in pathology and Dr. Hall in physiology and pharmacology. A committee was appointed and after canvassing the field of microbiology, nominated Dr. Norman F. Conant as chairman of that department. Committees also have been appointed to nominate to the President new chairmen of the departments of pathology, physiology and pharmacology, and also my successor.

Research: Although everyone agrees that the number of papers published is no criterion of their value, it at least is an index of the activity of the faculty. A total of 307 individuals in the Medical Center have published 254 papers during the past year. The names of the authors and the titles of the articles will be included among the *University Publications.* Funds for the research program are largely furnished by the National Institutes of Health, the American Heart Association, the American Cancer Society, the Cerebral Palsy Fund, the National Foundation for Infantile Paralysis, and other foundations, the Frederick M. Hanes Bequest, and the budget of the Medical Center. The total amount of money expended on research during the past year at the Medical Center was in excess of two and a half million dollars from outside funds, in addition to that furnished by Duke University.

It is high time that someone pointed out the dangers of the current research programs in medical schools, as well as their benefits, and called attention to the fact that although medical education cannot be sound without medical research, the latter by having, at present, more available funds than the former is dominating the partnership.

American medical education may be following the downward path of Germany. When Ehrlich in 1907, while searching for a cure for malaria, discovered salvarsan which would cure syphilis, the German government felt that a cure for all diseases might be found if there were more institutes like that in which Ehrlich worked, so, a dozen Kaiser Wilhelm Institutes were placed in different parts of Germany and the best brains were siphoned away from the medical schools and segregated into these institutes. As a result, German medical education fell lower than it was in 1870 when the French indemnity from the Franco-Prussian War rescued it from mediaevalism.

Our Congress, as well as the fund-raising agencies, reasoned quite logically that if two billion dollars would build an atomic bomb, a similar amount of money should discover the cause and cure of cancer, and methods for the prevention of heart disease; and it might. As a result, we are even worse off than the prewar Germans, because instead of siphoning off medical brains into separate institutes, we are luring innumerable technicians and junior researchers into our already overcrowded teaching and patient areas. This pressure is probably the basis for the desire of many of the faculty to spread buildings out in all directions like Stephen Lea-

cock's Lord Ronald who "mounted himself upon his horse and rode madly off in all directions."

Planning for the Future: Many of the recommendations of the Medical Center Planning Committee and its ten subcommittees are excellent, but most of them must be retailored for the good of the Medical Center and of the University rather than for the individual departments concerned.

The great contributions which the Medical Schools of Colorado, Vanderbilt, Rochester, Cornell, Columbia and Duke have made are based on a coordinated curriculum in a coordinated building under one roof. Lack of adequate funds made it necessary to divert part of our research program into the Bell Building in which the construction is much less expensive initially though more costly in upkeep. Several of the subcommittees are now worsening that dichotomy by suggesting separate buildings for the library, a child health center and for the study of the aging, as well as divorcing the preclinical sciences and their teaching program into another separate building. At the rate at which the subcommittees are proceeding, we shall soon have a German type of medical school with a series of separate institutes which have nothing to recommend them.

In spite of our overcrowded curriculum and our attempt to teach basic medicine, there is a demand on the part of some members of the Planning Committee that "knowledgeable persons actively engaged in research," and research professors be obtained in the fields of neurophysiology, renal physiology, tissue culture, physical anthropology, genetics (both human and microbial), immunochemistry, cytochemistry, biophysics, experimental embryology, cytology and homotransplantation. The Planning Committee also recommended that there be an increase in the teaching of medical history, genetics, electronics and biophysics, areas which are neglected at the present time. The most hopeful contrast to this cafeteria of subjects was a statement in Dr. E. A. Stead's report that "at Emory our first assignment was to free the faculty of any compulsion to cover a very large block of knowledge."

No accurate study has yet been made of the cost of this expansion of building and personnel, but several members of the Planning Committee estimated that several million will be needed to match Federal grants.

NEEDS OF THE DUKE UNIVERSITY MEDICAL CENTER

(Not necessarily in the order of urgency)

More School of Nursing faculty
Loan and scholarship funds for the School of Nursing
Preclinical teaching and research space
Radiologic and isotope space
Children's beds and child-center facilities
More psychiatric space
A better student lounge and locker room
More storage space
Student dining room and snack bar

Addition of "major medical catastrophic illness clause" to the present Duke medical and hospital care policies
Overnight housing for ambulatory patients and their families
Apartments for married faculty, staff, students and interns
Dormitory space for men and women students of medicine, nursing and technology
Microfilming of x-ray films, Pathology and Medical Center records
Air-conditioning of patient space and renovation of the 1930 building
Sabbatical leave privileges for the faculty and staff
Payments to the house staff instead of maintenance
Security office to reduce thefts and borrowings
Public relations counsel
Private beds for Negro patients
Offices and class rooms for the School of Nursing
A Chapel for the Hospital
New and more adequate infirmary for the East Campus
Space and facilities for annual physical examinations of the faculty
A mental health clinic for students and faculty
Department of Pharmacology
Renovation of a number of the "back wards" of the Hospital including adequate waiting rooms, examining rooms, nursing stations and air-conditioning
Removal of the telephone exchange and printing departments from the present Hospital building
A separate warehouse or large storeroom area for the Medical Center
Creation of additional waiting rooms, particularly for visitors, and a gift shop
Improvement of access roads to eliminate non-Medical Center traffic in front of the Hospital and facilitate traffic to and from the Hospital
Additional parking with adequate controls
An information center, waiting room, bus and taxi terminus outside the Hospital
Creation of the equivalent of a central clinical laboratory by consolidating many such individual facilities which now exist but without altering their professional direction
Expansion of the brace shop
Expansion of space for the radioisotope laboratory
Renovation of the original pharmacy to provide adequate storage and processing facilities
Additional file space for the medical record library with an adjoining reading, research and conference room
Renovation of the original operating rooms and of the obstetrical facilities
Assistant directors of the nursing service for each of the clinical services
Expansion of the program for white practical nurses and replacement of the Hospital orderlies with colored male practical nurses
An increase of approximately 30 staff nurses for the in-patient and out-patient services
An emergency power supply for the Center
Extension of the central oxygen system to the entire Hospital which will probably entail installation of a large liquid oxygen tank
Extension of central piped suction to all patient areas
Replacement of obsolete hospital furniture with modern high-low beds
Improvement of telephone, paging and intercommunication system
Installation of automatically controlled doors in various areas
Completion of the air-conditioning for the present Hospital building
An elevator at the OPD entrance and a new elevator in the present Medical School
More space for the physical therapy and occupational therapy departments
Diagnostic x-ray expansion
More space for the blood bank and experimentation laboratory

Clinical units (metabolism, cardiology, neurology etc.) similar to Hematology Laboratory
Cafeteria expansion
Kitchen and dishwashing expansion
Nursing equipment storage space
Space for records storage (x-ray, medical records, laboratories, EKG etc.)
More space for the surgical pathology laboratory
Medical illustration expansion
Business Office: More space for collections and for the insurance division
Unify the clinics in the out-patient department
Open the "morgue" elevator on the first and second floors for passenger traffic
Better access to the emergency room plus an admission unit
A new milk formula room
Space for an appointment system and centralized admitting
Move the cytology laboratory from the fourth floor
Move the endocrine laboratory from Prevost Ward
A new obstetrics bacteriology laboratory
More student laboratories
More office space—for all departments
Expansion of the vocational rehabilitation office
Library expansion
More animal quarters
In-Service training space and equipment
Central biochemical routine and research laboratory
Branch bank to serve the employees and visitors
Retiring room for bereaved relatives
Extension of the pneumatic tube system

THE SCHOOL OF NURSING

Dean Ann M. Jacobansky has submitted a comprehensive report for the current year. Excerpts from that report follow:

Faculty

"A faculty composed of imaginative individuals who are able to promote workable ideas is vital to the success of this school. We must strive for securing a sufficient number of faculty members of high quality in all areas as well as holding those who are well qualified. This School of Nursing, like other educational institutions, is faced with a shortage of qualified teaching personnel. Because many well established nursing schools as well as governmental and service agencies seek quality of equal calibre, we are in serious competition for personnel in extremely short supply.

"The faculty of the School of Nursing have participated more actively in community and professional activities on a local, state and national level. It is believed that this contributes not only to the advancement of the staff, but also to a broader view point of their profession within the University and community as well as in providing contacts and leadership opportunities outside the school.

Students

"Although the number of applications did not increase over the number last year, it is our opinion that it was possible for us to be more selective and that it is still possible for us to have higher selectivity than it is for the average collegiate nursing school. The School of Nursing is increasingly dealing with a more highly selected group of students. As this trend continues, we must make provision for intellectual stimulation characteristic of college education and equal to the atmosphere of other schools in the University. In addition to the total program of study, attention must be directed to the exceptional students in Nursing. Consideration must also be given to the many diversified demands on our graduates, and plans for types of programs to meet these demands must be formulated.

Admissions

"As of May 1, 1959 we had received 305 applications for admission and had accepted 134, placing 25 on the Waiting List. There were 119 rejections and 27 withdrawals after acceptance. Of the total who applied, 57 were from North Carolina; 25 of these were accepted. Our highest percentage of applications and acceptances is from the Middle Eastern states.

Needs

"The School of Nursing, as is true of other schools within the University, is faced with the major problem of physical facilities. At the present time we do not have adequate space for the faculty. Efforts have been directed at securing office space in the hospital. However, this has not proved successful. Since Hanes House is the administrative building as well as the dormitory for the students, it appears that this is the only place from which offices might be drawn.

"The need for an Infirmary in Hanes House has long been felt. During this past year a temporary Infirmary has been set up by the utilization of three bedrooms in Hanes House. Students who have minor illnesses of an infectious nature are isolated in this area. The number of days of hospitalization has decreased considerably. Since the Infirmary has been in operation there have been only 104 days of student hospitalization as compared to 310 days for the same period one year ago. Some 222 students have been confined to the Infirmary for this period. It is assumed that the majority, if not all, may have been hospitalized if this facility were not available. A section of Hanes House should be designated as an Infirmary for students who need minimal care and observation, but do not require hospitalization."

DUKE HOSPITAL

Mr. Charles F. Frenzel, who is completing his first year as Superintendent of the Hospital, reports as follows:

"In the past year, Duke Hospital has continued to readjust its operations from the effect of opening the new $4,000,000 wing last year. The $250,000 Ford Foundation Grant was used to effect a part of the renovations of the older sections of the Hospital. Matas Ward now occupies a part of the former Drake Ward and has been increased from 18 to 24 beds. Old Matas Ward has been converted to additional space for the Blood Bank and to provide consultation rooms and offices for in-patient psychiatric care. Cabell Ward, completely renovated, is in use for open ward psychiatric patients with a capacity at present of 20 patients. Drake Ward, having undergone a face lifting, is now being utilized as a 19 bed unit for minimal nursing care patients. This experiment has been well received by this type of patient, those who are not acutely ill and are served their meals in the new Ambulatory Dining Room.

"At the end of the last year the Hospital had available 553 adult beds and 30 bassinets. This number has been gradually increased until at present there are available 601 adult beds and 30 bassinets. On April 9, 1959, a new high in in-patient census of 556 patients was recorded. The previous high census prior to this year was 529 patients in 1951.

"During the last Duke Endowment reporting year, 19,001 patients received 164,722 days of care at Duke Hospital; there were 16,761 operations, 777,960 laboratory tests and 66,468 x-rays. A total of 1,229 babies were delivered by Duke Hospital obstetricians. The Medical and Surgical Private Diagnostic Clinics recorded 90,472 patient visits, the Out-Patient Department and the Emergency Room 101,883 visits. In addition, 15,776 visits were made to the departments of radiology, physical and occupational therapy etc., or a grand total of 208,131 visits during 1958. These and many other services cost the hospital $26.60 per in-patient day of care and $7.60 for each out-patient visit.

"The Women's Auxiliary of Duke Hospital continued its invaluable service to patients by providing 26,220 hours of volunteer services. The Auxiliary now operates two snack bars, one in the Out-Patient Department and the other in the Hospital in addition to the traveling supply cart, library cart and magazine cart. A new play center for our younger patients has been provided, and members of the Auxiliary spend many hours in amusing the children on Howland and Matas Wards.

"The steady increase in numbers of patients during this year would indicate that Duke Hospital and its staff will be called upon for even greater service in the year ahead."

PAST PROGRESS

To paraphrase Harvey Cushing's dedication in his *Life* of Sir William Osler, the following pages were written "in the hope that something of the spirit of the Founder may be conveyed to those of a generation that has not known him; lest it be forgotten who it was that made it possible for them to work at the Duke University Medical Center."

Much has been accomplished during the thirty-four years since Mr. J. B. Duke's death on 10 October 1925 and the forty-nine years after Dr. William Preston Few, on his election to the presidency of Trinity College in 1910, began his plans for the establishment of a four-year medical school in Durham. Dr. Few had many discussions on the subject with Mr. Duke, Dr. Watson S. Rankin, the State Health Officer, and Mr. Alexander H. Sands, Jr., and on 11 December 1924, Mr. Duke established The Duke Endowment in which he selected hospitals as one of its principal objects:

> I have selected hospitals as another of the principal objects of this trust because I recognize that they have become indispensable institutions, not only by way of ministering to the comfort of the sick, but in increasing the efficiency of mankind and prolonging human life.

A codicil to his will dated 1 October 1925, ten days before his death stated:

> There is bequeathed to The Duke Endowment the sum of Ten Million Dollars and the Trustees shall use not exceeding Four Million Dollars in erecting and equipping at Duke University a Medical School, Hospital and Nurses Home.

During the past thirty-four years, the impact of The Duke Endowment and the Duke University Medical Center on medicine and hospitalization has been felt not only in the Carolinas but throughout the South, the Nation, and even the World. To quote the late Al Smith: "Let's look at the record."

From Mr. Duke's death in 1925 to 31 December 1958, the Hospitals Section of The Duke Endowment under the able direction of Dr. Watson S. Rankin, and of Marshall I. Pickens who succeeded him, contributed $31,698,577 to assist the hospitals in the Carolinas, including Duke Hospital (Duke University receives a separate appropriation) in meeting their operating, building and equipment expenses. Through its contributions to Duke Hospital, as well as to Duke University, and its financial help to community hospitals, The Duke Endowment has directly assisted over 25 per cent of the population of North and South Carolina and 52 per cent of the patients in the present 225 non-profit hospitals.

When The Endowment commenced its operations in North and South Carolina in 1925, the two states had 6,184 general hospital beds, 3,598 physicians, one four-year medical school in South Carolina and two two-year schools in North Carolina. On 30 September 1957 these two states had 20,508 general hospital beds, 5,726 physicians, and four four-year medical schools.

The services rendered hospitals in the way of information, consultation and education by The Duke Endowment cannot be valued in dollars alone. The Charlotte office of The Endowment has served as a clearing house of information for the hospitals in the Carolinas and elsewhere in providing uniform accounting and clinical records, with the resulting cost,

personnel, clinical and other comparisons for the aid and guidance of hospital trustees and administrators.

Great progress also was made in eliminating unnecessary multiplication of hospitals and in cutting down unnecessary overhead as indicated in the increase in the average size of general hospitals and in the decrease in the number of hospitals with less than 25 beds.

Many other factors have, of course, contributed to this progress, e.g., Governor Broughton's Good Health Commission, the Hill-Burton Bill, the two Blue Cross plans (the Hospital Care Association of Durham and the Hospital Savings Association of Chapel Hill, both of which owe their origin to The Duke Endowment and the Medical Center), the North Carolina Medical Care Commission, and the increased prosperity of the two states, but Mr. Duke through his Endowment was responsible for *initiating* the North and South Carolina as well as the national and international programs.

Other states, and representatives of foreign governments, have studied the pattern set in the Carolinas by The Endowment and have sought funds to imitate it. By 1937, bills were introduced into the Congress by Senators Robert Taft and Lister Hill and Congressman Harold H. Burton to authorize the U. S. Public Health Service to provide a nation-wide hospital program like that of The Duke Endowment. As a result, Surgeon General Thomas Parran of the U. S. Public Health Service asked Dr. Watson S. Rankin for an opportunity to study, at first hand, the community hospitals in North and South Carolina which were assisted by The Endowment and particularly to observe the influence of these hospitals in attracting young, competent physicians and surgeons to settle in their vicinity. Dr. Rankin and Mr. Charles A. Cannon arranged for Dr. Parran's tour of the Carolinas. Dr. Vane M. Hoge, Hospital Director of the U. S. Public Health Service, accompanied Dr. Rankin on a second survey of The Duke Endowment program in 1938. After the Second War, the Hill-Burton Bill and State Medical Care Commissions, like that in North Carolina, implemented, throughout the country, a program similar to that of The Duke Endowment, which has assisted and encouraged local communities in providing modern and improved hospital facilities and equipment, and through these facilities, improved medical care, in accordance with Mr. Duke's advice which emphasized local support. Federal funds also are being used to establish comparable projects in Taiwan (Formosa) and other countries.

The Duke University Medical Center also has made a creditable record. A survey in 1934 by the Association of American Medical Colleges placed the four-year-old Center among the best twenty-five per cent of the eighty-five American medical schools. In 1956, based on the dollar volume of grants from the NIH, the Medical Center was sixteenth among the total of eighty-five schools, and first in the South.

The first official survey of the Center by the Council on Medical Education and Hospitals of the American Medical Association in 1935 stated:

> Duke University Medical Center has made phenomenal progress during the first years of its existence. The outstanding features involve an unusually well trained faculty, relatively large departmental staffs and a well planned curriculum. The activities of the various departments are very closely coordinated and a considerable number of faculty serve in both preclinical and clinical departments.
>
> The teaching of the preclinical departments is well correlated with the clinical subjects which are to follow and the teaching in the clinical departments is correlated back with the work of the preclinical departments.
>
> The medical course can be said to be a real cohesive one, aimed at a well rounded grounding in the fundamentals of medicine and in methods of approach to clinical problems.

The following is a statement made by the Secretary of this American Medical Association Council twenty-five years later:

> The greatest contributions which the Duke University Medical Center has made to the profession and to the field of medical care lie in the products of its undergraduate, graduate and postgraduate educational programs. It was recognized at the outset that the true worth of an educational institution rests on the merits of its product, namely its alumni. True enough, medical care and the advance of knowledge through research are important, but they are component parts of a modern program of medical education.

The Alumni Association of the Duke University Medical Center in 1958 had 3,182 members, including 1740 graduates of the medical school, 179 past and present members of the medical faculty, and 1,263 past and present house officers of Duke Hospital (904 of whom were not Duke graduates). The graduates of the Center are now practicing in every State of the Union, in addition to the 128 physicians living abroad and 45 on duty in the Armed Forces overseas. The largest number are in North Carolina (including in 1958 217 non-North Carolinians, indicating Duke's influence in attracting physicians to the State), with Florida, New York, California, Virginia, Texas and South Carolina following in that order. Fifty or more of the Duke Medical Alumni are professors or deans in other medical schools in this state and nation, and abroad.

Patients from every county in North Carolina and from all of the fifty states, as well as from a number of foreign countries have come to the Center for surgery and other treatment. And physicians throughout the world make use of therapy and techniques developed at Duke. From 1930 to 1958, 375,001 patients were given 3,901,931 days of care. Over 3,000,000 visits have been made to the public and private out-patient clinics.

Some of the achievements for which the Center can take credit are: the first course in hospital administration, an outside obstetric service in

Charlotte, an outside pathological service, flat hospital rates, private diagnostic clinics, an effective vaccine against equine encephalomyelitis, numerous other virus studies, a course for medical record librarians, the ultraviolet sterilization of operating rooms, an intensive nursing service, a cafeteria for ambulatory patients, the first hospital blood bank, the organization of the 65th General Hospital, compulsory rooming-in, the largest number of Markle Scholars selected from its graduates and staff of any medical school (another one this year) and one of the best medical libraries in the country, through purchases and through the gifts of the Georgia Medical Society and of the Josiah C. Trent, Jr. Medical History Collection.

The Medical Center's international impact is illustrated by the 300 or more foreign physicians who have studied at Duke, the staffing of the Atomic Bomb Casualty Commission at Hiroshima and Nagasaki, and the furnishing of consultants to the hospital and medical school in Taiwan.

Conclusion: As indicated above, the more we grow and progress, the more we need. Actually, however, most of the items listed among our needs are necessary to maintain our present position and to consolidate our progress.

As we have done for the past twenty-nine years, all of us in the Medical Center thank the General Faculty, Administration and Trustees of Duke University, and of The Duke Endowment for their very great help and cooperation.

W. C. Davison
Dean

APPENDIX

Students

11 September 1958, 84 first year and 4 second year were admitted to the Nursing Degree Course. On 15 September 1958, 78 first year, 2 second year, and 5 third year were admitted to the Medical School.[1] On 15 September 1958 there were 316 Medical students, 260 interns, residents, fellows,[2] 8 hospital administration students, 323 School of Nursing students,[3] 5 Dietetic Interns, 7 Nurse Anesthesia students, 27 Physical Therapy students, 13 X-ray technology students, 5 Medical laboratory students, 27 Graduate (Ph.D.) students, 26 Postdoctoral (M.D.) fellows, making a total of 1,017 students being taught in the Schools of Medicine, Nursing, Hospital and Paramedical Courses.

Degrees, Diplomas and Certificates

8 June 1959, 78 received the M.D. degree, 9 the Ph.D. degree,[4] 75 the B.S. degree,[5] 14 the Diploma in Nursing, 163 Certificates,[6] making a total of 336 completing their courses in the Schools of Medicine and Nursing, Duke Hospital and Paramedical fields.

Major Events of 1958-1959

21 October 1958, Duke Pediatric Society Dinner honoring Miss Mildred M. Sherwood's thirty-five years of service to children (Chicago, Illinois); 31 October 1958, Duke Medical Alumni Reunion; 4 November 1958, Medical Alumni Dinner (New Orleans, La.); 13-14 March 1959, Dr. Wiley D. Forbus' Sixty-Fifth Anniversary; 4-13 April 1959, Duke Postgraduate Cruise to Nassau; 26 April 1959, memorial service for Mrs. Frederick M. Hanes, was held in the Elizabeth P. Hanes House for Nurses which she gave to the Medical Center; 27-29 April 1959, Mrs. Je Harned Bufkin held a very successful Conference on Medical records for Medical Record Personnel and Hospital Administrators; 4 May 1959, Medical Alumni Luncheon (Asheville, N. C.); 12 May 1959, Paul M. Gross' Fortieth Anniversary; 10 June 1959, Medical Alumni Dinner (Atlantic City, N. J.).

[1] Selected from 978 applicants; 1% of the applicants were women. In this first year class, 30% are from North Carolina, and 70% from 20 other states; 1% are women.

[2] Including 30 from foreign countries.

[3] 29% from North Carolina.

[4] 1 in Anatomy, 2 in Biochemistry, 3 in Physiology and 3 in Microbiology.

[5] 5 in Medical Technology, 5 in Medicine, and 65 in Nursing.

[6] 5 in Dietetics, 8 in Hospital Administration, 125 interns and residents, 13 in Physical Therapy, 5 in X-ray Technology and 7 in Nurse Anesthesia.

THE SCHOOL OF FORESTRY

To the President of the University:

I have the privilege of presenting herewith the annual report of the School of Forestry for the 1958-59 academic year. Reflected in this review is the team effort displayed by the faculty of the school in bringing several events of note to their successful conclusion.

ENROLLMENT

Of particular significance was the marked upswing in enrollment over that of the past several years. There were 26 students enrolled in the work of the Summer Session. Registrations for the Fall term rose to 60, 24 over those of the previous year, or a net gain of 67 percent. Of this number, 45 were new students.

Fifty men are currently engaged in work leading to the degree, Master of Forestry. Nine others are pursuing a program of study and research leading to the degree, Doctor of Forestry. There was also one special, no-credit student. Two students, both of whom are candidates for the Ph.D., have been pursuing their major work in the Department of Forestry of the Graduate School of Arts and Sciences.

The student body represents 45 accredited institutions of higher learning. Twenty-eight students (46.7%) are from colleges and universities collaborating in the 3-2 academic-forestry training program. Five others (8.3%) are graduates in the liberal arts and sciences of non-cooperating institutions. The remaining 27 (45%) are graduates of professional schools and colleges of forestry.

The Committee on Admissions reports that enrollment for the 1959-60 academic year will closely proximate that of the current one.

SCHOLARSHIP-FELLOWSHIP PROGRAM

Scholarships and fellowships ranging in value from $250 to $1800, and totaling $22,420 were awarded to 34 students. Included in these totals were the Union Bag-Camp Paper Company fellowship of $1200, and the Percy Chubb and American Cyanamid Company scholarships of $770 and $800, respectively.

SYMPOSIA

The School of Forestry sponsored two successful and well attended symposia during the year.

The first of these, "Mineral Nutrition of Forest Trees", was held December 3-4, 1958, with approximately 250 botanists, horticulturists, agronomists and foresters in attendance. This was the first symposium of its kind in the South. The program provided formalized papers and panel discussions on a broad range of topics related to laboratory and field studies

of inorganic nutrition of arborescent plants. Contributions and viewpoints of investigators in forestry and in allied fields were reviewed as guide points for expanding research programs in forest tree nutrition. The program was under the direction of Professor C. W. Ralston. The American Potash Institute of Washington, D. C., generously contributed a sum of money which not only defrayed the costs of the symposium, but which will also make possible publication of the proceedings.

"Direct Seeding in the South—1959" was the theme of the School's second symposium, held April 21-22, and attended by nearly 300 forest managers, forest scientists and land owners.

A rash of devastating forest fires in the South, a fuller appreciation of seed metabolism and the physiology of seed germination, newly developed techniques for protecting seed from predators, rising costs in growing and planting nursery stock, and the ability to sow seed with light aircraft, are major contributing factors in the renewal of interest in direct seeding as a practicing technique in the regeneration of southern forests. The economic, physiological, mechanical and administrative problems of direct seeding were presented by a group of authoritative panelists. Past, present and planned research for the future was reviewed. Several hundred dollars were contributed to the symposium by a number of southern industries, and the publication of its proceedings is thus assured.

A DEMONSTRATION OF DIRECT SEEDING

The School of Forestry, with the cooperation of the North Carolina Forest Service and Hawk Helicopters of Fort Worth, Texas, gave a direct seeding of pine by helicopter demonstration at the Bladen Lakes State Forest near Elizabethtown on November 25, 1958. This was the first exhibition of its kind in our area, and was witnessed by some 100 representatives from industry, forest managers and state and federal foresters. Professor Woods demonstrated methods and various materials used to treat seed prior to dissemination. A number of check plots established in the area were used to determine the uniformity of dispersal of the released seed. The total success of the demonstration can be evaluated only after counts of established seedlings are made at the end of the current growing season.

COOPERATIVE ACADEMIC-FORESTRY PROGRAM

Several of our cooperating institutions report a notable increase in student interest in the 3-2 academic-forestry program. A recent census would seem to indicate that we may reasonably expect to receive 15 to 25 students annually from these colleges and universities.

At the request of its president, Tennessee Wesleyan College, Athens, Tennessee, was added to our family of collaborators. This affiliation was consummated, however, only after the College's offerings were critically reviewed and found satisfactory, and when it agreed to offer a curriculum

of pre-professional study patterned after the one currently offered in Trinity College of Duke University.

RESEARCH

Research in various disciplines of forestry and forest products technology continues to be a major activity of the faculty. A number of cooperative projects with the U. S. Southeastern Forest Experiment Station and the Soil Conservation Service were initiated during the year. Considerable use has been made of the Digital Computer Laboratory by these two agencies. During the year their combined demands for services and machine time amounted to $12,336.

LOBLOLLY PINE MONOGRAPH

This project, initiated by Dr. C. F. Korstian in 1953, is nearing completion. Work has progressed according to plan, and it is anticipated that the final draft of the manuscript can be delivered to the printer early in 1960.

THE DUKE FOREST

Forest operations during the year centered largely around the thinning of the forest's plantations. The earliest plantings were made in 1931, and planting continued fairly regularly until 1956 when pine was established on the last of the open fields. More than 1400 acres of the forest are now in plantations. As the stands reach an age of from 18 to 20 years, numerous trees are removed, perhaps one-quarter of the total number of stems, and sold as pulpwood. This leaves the residual trees with more growing space to produce quality sawtimber. Pulpwood thinnings have been quite remunerative over the years, but particularly so during the past two years. Competition among pulpwood buyers locally has raised stumpage prices this year to more than double those of three or four years ago.

This is not so, however, with sawtimber. Only about 300,000 board feet were cut in the past 12 months, largely in salvage and minor rights-of-way clearing. The declining lumber market has depressed sawtimber stumpage prices locally to about 60 percent of that received several years ago. If these trends continue, that is, rising pulpwood prices and falling sawtimber prices, it appears that certain portions of the Forest should be used for the production of pulpwood as a final product. This would, of course, permit a more rapid turnover of inventory.

There has been a noticeable decline in the use of the picnic areas in the Duke Forest. During the year 308 parties of 4,370 people engaged these sites. Six years ago 663 parties of 10,486 people were issued permits. Much of the decline is probably attributable to decreased use by townspeople, many of whom now have their own backyard fireplaces or charcoal grills.

Recognition of Dr. C. F. Korstian's many years of service to the school and to the University was made in October of 1958 when, with

the approval of the University's Administration, the New Hope Division of the Duke Forest was renamed the C. F. Korstian Division.

Sixty-two acres of forest land were added to the Blackwood Division in May. A few weeks earlier 152 acres were withdrawn from the C. F. Korstian Division and established as a natural area for long-range research in plant and animal ecology. The administration of this area has been vested in a special committee of the University faculty composed of Dr. H. J. Oosting (Botany), Dr. J. R. Bailey (Zoology), and Dr. F. W. Woods (Forestry). Dr. Woods is serving as chairman.

On June 30, 1958 Mr. Manly R. Blackmon retired as Superintendent of the Forest after 23 years of service. It is with sorrow that I report his death on March 2, 1959. Mr. Blackmon's duties were assumed on September 1, 1958 by Mr. Fred M. White.

ARBORETUM

Several new plantings were made in the Arboretum this Spring. Seed exchanges were consummated with agencies in Japan, New Zealand, Austria, England and Washington State. About 20 species of coniferous seed have been obtained from these sources. Seedling stock of most of them should be ready for transplanting to the Arboretum in the Spring.

FACULTY

New appointments. Dr. F. W. Woods joined the faculty of the School of Forestry in the capacity of Assistant Professor of Silviculture on August 1, 1958.

Dr. J. D. Sullivan received an appointment as Assistant Professor of Wood Technology effective January 1, 1959.

Honors. Professor F. X. Schumacher was accorded a signal honor during the year. In recognition and appreciation of his outstanding pioneer work in the field of forest biometrics and of his many scholarly contributions to the research literature in both forestry and biometrics, on May 24 North Carolina State College conferred upon him the honorary degree, Doctor of Science.

The faculty at large continue to assume leadership in the profession, through their research and publication and through their contributions to regional and national organizations. Our men hold key positions in the forestry and allied societies; many serve in advisory capacities with government and other research agencies.

GIFTS

The School of Forestry received gifts in the form of services, materials, equipment and cash during the 1958-59 academic year totaling $21,951.

E. S. HARRAR
Dean

THE SUMMER SESSION

To the President of the University:

ENROLLMENT

The trends of increasing enrollments experienced in recent summers continued in the Summer Session, 1959. Although the increase in enrollment in regular academic courses and research was not as great as the 10.5 per cent increase in the 1958 Summer Session, the five per cent increase in 1959 was substantial. Continued increasing enrollments in the graduate school may make imperative the need for expanded course programs at the "200" level in certain departments.

The enrollment in Term I increased from 1320 in 1958 to 1380 in 1959, and in Term II from 1030 in 1958 to 1090 in 1959. In the Graduate School of Arts and Sciences the increase in Term I was from 441 to 556, and in Term II from 386 to 486. In the School of Nursing the increase, Term I, was from 240 to 256, and in Term II from 169 to 182. In Trinity College there was a marked decrease in enrollment for both terms. In Term I the decrease was from 323 to 267, and in Term II from 236 to 205.

The total enrollment figures for Term I represent a 4.5 per cent increase and for Term II a 5.8 per cent increase.

ENROLLMENT OF PUBLIC SCHOOL PERSONNEL

Again the enrollment of public school personnel showed an increase. The enrollment for the two terms (less duplicates) increased from 192 in 1958 to 220 in 1959. Over one-half of these teachers (132) were from North Carolina. Twenty-five of the teachers came from Virginia; eleven from South Carolina; nine from Pennsylvania; eight from Florida; and seven from Georgia. In all there were teachers from eighteen different states.

ACADEMIC PROGRAM

The academic program for 1959 followed in general the pattern established during the past several summers. For a number of years the University has attempted to build academic programs which would meet the needs of the following groups of persons attending the Summer Sessions: (1) Duke undergraduate students; (2) an increasing enrollment of Duke graduate students; and (3) a growing number of teachers. There is a continuing effort on the part of the University to maintain Summer Session academic programs with standards comparable to those prevailing in the regular semester.

Several academic departments have established inter-departmental graduate courses which have attracted large enrollments and have en-

gendered unsolicited commendation from students. Enrollments in all the Summer Session courses indicate that, in the main, departments did well in determining those courses most needed and in establishing the proper sequence of courses. In spite of the heavy demand placed on both students and faculty by the highly concentrated effort in summer courses, the over-all results have been good. Increased summer enrollments should continue to be one of the aims of the Summer Session in so far as the attracted students desire first class instruction and are prepared to meet high standards in academic achievement.

Scholarship Program

Thirty-eight scholarships of $150 each were awarded on a competitive basis to elementary and high school teachers. This program which was begun in 1952 had as its chief purpose the encouraging of able teachers to begin or to continue study toward the Master's Degree. Awardees of the 1959 Summer Session Scholarships for Teachers were for the most part superior teachers and did satisfactory graduate work. This program will need to be continued if the University is to attract the able teachers. Seven scholarships of $200 each were awarded to school principals.

The Graduate School awarded seven grants-in-aid to faculty members in colleges. These persons make use of the facilities of the University for study and research during the Summer Session.

The Department of Education continued its program of tuition scholarships to teachers who assisted in the Department's practice teaching program.

Asian Studies

The Sixth Annual Summer Program in the Asian Studies presented in History and Political Science attracted one of the largest enrollments since its inception. Again the program was jointly sponsored by the University, the Japan Society, and the Asia Foundation. Ten scholarships of $200 each were awarded on a competitive basis. In the absence of Dr. Ralph Braibanti, the Resident Director, instruction was offered by Dr. Robert A. Rupen of the University of North Carolina.

SPECIAL PROGRAMS

Annual Conference on School Law

The annual conference on School Law directed by Dr. E. C. Bolmeier was attended by 250 persons. Professor Bolmeier of the Department of Education and Professor Robert Kramer of the Law School have succeeded in establishing a conference which has proved to be most valuable to school administrators and principals.

Commonwealth-Studies Center

The fourth summer Seminar of the Commonwealth-Studies Center was held from June 15 to August 15. The central theme was "The Growth of Canadian Policies in External Affairs." Distinguished lecturers included: Professor James Eayrs, University of Toronto; Professor Gerard Bergeron, Laval University; Professor Vincent W. Bladen, University of Toronto; and Mr. Edgar Innis, President of Canadian Institute of International Affairs.

Conference on Elementary Education

The fifth annual two-day conference in Elementary Education was held on June 25-26. "Improvement of Instruction in Arithmetic" was the theme. Dr. Francis Mueller of Towson State Teacher's College at Towson, Maryland, was the chief consultant. The total number of registrants and guests was 375. The interest in these conferences warrants a continuation of this type of program.

Radiation Biology

The special program in Radiation Biology was offered for the fourth consecutive summer. This program which is held at the Marine Station continues to attract large enrollments.

National Science Foundation—Mathematics and Science Institute

The Science and Mathematics Institute, sponsored jointly by the National Science Foundation and Duke University, operated from June 11 to August 8. The ninety participants in the 1959 program were high school science and mathematics teachers. The program for elementary supervisors offered in the two previous Summer Institutes was not a part of this year's program. It is felt that the special training afforded participants in the Institute is excellent and should result in more effective mathematics and science teaching in the high schools.

Mathematics for Retired Armed Services Officers

During the 1959 Summer Session the University offered for the second time a special program leading to the degree of Master of Arts in Teaching designed for retired armed services officers who are preparing thmselves to teach mathematics in high school or college. The enrollment in the 1959 program was below that of 1958.

Computer Institute for College Teachers of Mathematics

The Mathematics Department of Duke University in cooperation with the National Science Foundation offered a Summer Computer Institute for college teachers in mathematics. The Institute, which operated from June 15 to July 24, had nineteen enrollees. The objective of the Institute was to give participants a background in the theory, operation and application of the digital computer.

Research Conference on Christianity and Politics

The Lilly Endowment Research Program of the Department of Political Science in cooperation with the Graduate Department of Religion was in session from June 15 through July 25. Eight post-doctoral fellows were invited to participate. This program was begun in 1958.

Western Electric

The third annual four-week course for employees from Western Electric was directed by Professor Charles R. Vail of the College of Engineering.

Clinic in Preaching

The Clinic in Preaching under the direction of the Rev. Dr. James T. Cleland, James B. Duke Professor of Preaching and Dean of the Chapel, was held for the third consecutive summer.

Other Special Programs Included:

The School for Approved Supply Pastors, Conference of the Youth Council of the Methodist Youth Fellowship, Conference of the School of Missions Committee of the Woman's Society of Christian Service of the N. C. Conference of the Methodist Church, the Laymen's Assembly of the North Carolina Conference of the Methodist Church, and the North Carolina Sewage and Industrial Waste Treatment School.

CONCLUDING STATEMENTS

Present needs of the Summer Session remain about the same as those indicated in the 1958 Report to the President. From the standpoint of both enrollment and instructional program, the 1959 Summer Session has been very satisfactory.

Attached are statistical data, including the table showing enrollments in the two terms by colleges.

OLAN PETTY,
Acting Director

GENERAL SUMMARY OF ENROLLMENT IN REGULAR ACADEMIC COURSES AND RESEARCH
(Figures are for number of persons)

	Men		*Women*		*Total*		*Total 1959*	*Total Less Duplicates 1959*	*Total 1958*	*Total Less Duplicates 1958*	*Total 1957*
	I	*II*	*I*	*II*	*I*	*II*					
GRADUATES	459	421	227	160	686	581	1267	788	1069	675	957
Divinity School	21	26	1	1	22	27	49	35	60	40	67
Forestry School	18	19	0	0	18	19	37	21	52	29	36
Graduate School	383	351	173	135	556	486	1042	610	827	492	720
Unclassified Grads	29	19	52	24	81	43	124	108	116	101	114
Grants-in-Aid	4	2	1	0	5	2	7	7	5	5	10
Visiting Scholars	4	4	0	0	4	4	8	7	9	8	10
UNDERGRADUATES	311	240	383	269	694	509	1203	775	1281	812	1099
Engineering College	23	18	1	0	24	18	42	30	61	41	90
Freshmen	0	0	0	0	0	0	0	0	33	17	6
Sophomores	7	7	0	0	7	7	14	9	12	11	50
Juniors	6	5	1	0	7	5	12	9	13	10	17
Seniors	7	5	0	0	7	5	12	9	2	2	17
Specials	3	1	0	0	3	1	4	3	1	1	0
Trinity College	267	204	0	1	267	205	472	310	559	353	443
Freshmen	25	35	0	0	25	35	60	44	100	58	15
Sophomores	44	30	0	0	44	30	74	51	140	88	118
Juniors	104	82	0	0	104	82	186	116	215	128	132
Seniors	92	56	0	0	92	56	148	96	99	76	178
Specials	2	1	0	1	2	2	4	3	5	3	0
Woman's College	0	0	95	67	95	67	162	114	176	113	175
Freshmen	0	0	2	5	2	5	7	5	55	31	5
Sophomores	0	0	25	16	25	16	41	28	32	25	43
Juniors	0	0	41	29	41	29	70	48	49	31	60
Seniors	0	0	26	15	26	15	41	31	40	26	67
Specials	0	0	1	2	1	2	3	2	0	0	0
School of Nursing	0	0	256	182	256	182	438	258	409	246	285
Unclassified Undergrads	21	18	31	19	52	37	89	63	76	59	106
Totals	770	661	610	429	1380	1090	2470	1563	2350	1487	2056

SUMMARY OF ENROLLMENTS IN REGULAR ACADEMIC COURSES AND RESEARCH, MEDICAL SCHOOL, AND CONFERENCES AND SPECIAL COURSES

REGULAR ACADEMIC COURSES AND RESEARCH		
Enrollment for Term I	1380	
Enrollment for Term II	1090	
Total Enrollment for Summer Less Duplicates		1563
SCHOOL OF MEDICINE		
Enrollment for Summer Quarter	64	
Enrollment in Medical Mycology	10	
Total Enrollment for Summer		74
SPECIAL PROGRAMS		
June 8-July 3		
Western Electric Short Course	21	
June 11-August 12		
Special Programs for Teachers of Science and Mathematics	87	
June 15-July 25		
Lily Research Conference (Research Conference on Christianity and Politics)	8	
June 15-July 24		
Computer Institute for College Teachers of Mathematics	19	
June 15-August 15		
Commonwealth Studies Summer Seminar and Research Group	6	
June 22-August 14		
Radiation Biology	21	
Total Enrollment		162
CONFERENCES AND SPECIAL COURSES		
June 25-26		
Conference on Elementary Arithmetic	375	
June 23-24		
School Law Conference	250	
July 6-17		
Clinic in Preaching	19	
July 13-August 7		
School for Approved Supply Pastors	222	
August 10-14		
Conference of Methodist Youth Fellowship	512	
August 15-21		
Conference of School of Missions Committee of the Woman's Society of Christian Service of the North Carolina Conference of The Methodist Church	602	
August 22-23		
Laymen's Assembly of the North Carolina Conference of the Methodist Church	447	
August 24-28		
North Carolina Sewage and Industrial Waste Treatment School	70	
Total Enrollment		2497
Grand Total Enrollment		4296

THE UNIVERSITY LIBRARIES

To the President of the University:

Submitted herewith is a report on the growth and services of the University Library for the year ending June 30, 1959.

The library contained 1,390,540 volumes at the end of the financial period, 48,692 volumes having been added during the year. The Manuscripts staff added 64,427 papers, to bring total manuscript holdings to 2,627,947. Expenditures for books, periodicals and binding were up twelve per cent—from $250,014 to $279,969; and total expenditures were up 13.4 per cent—from $629,040 to $703,302.

Recorded use of materials in all the libraries increased 7.5 per cent, keeping step with what appeared to be a deeper student interest in the library. The Undergraduate Room for several years accommodated all who wished to use the library on Sunday nights; last Fall, however, it became necessary to open the Graduate Reading Room too in order to satisfy the demand for study space. Repeated requests from women students to close the Woman's College Library on Saturday evenings and open it on Sunday evenings led to an extension of the Sunday hours for a trial period of one semester. Use during the Spring was heavy enough to convince the staff that the new schedule should be continued.

The long-range needs of the library were carefully studied during the year and described in a report presented early in 1959 to the University Committee on Long Range Planning. Preliminary to drafting a report, a special Committee on Research Libraries, a sub-committee of the University Committee on Long Range Planning, composed of Professors William B. Hamilton, Benjamin U. Ratchford and the University Librarian (serving as chairman) visited several universities in the East, examined their buildings and discussed with their librarians and faculties problems that face this institution as plans are prepared to expand the General Library Building. The Committee on Research Libraries was assisted by the library staff in preparing the report, and also had the advice and counsel of the Library Council (members: Arlin Turner, chairman; Frank T. deVyver, Douglas G. Hill, Ransom R. Patrick, Ray C. Petry, Robert S. Rankin, Herman Salinger, Charles R. Vail, Harold T. Parker and B. E. Powell, *ex-officio*).

The report on the library's needs emphasized that the internal arrangement of the building must be determined by the interrelationships of its several functions, and that one of the principal features of the structure should be flexibility—its adaptability to changing demands. It stressed also that the building should be a pleasant place in which to work. Considerable attention therefore should be given to furniture, equipment and

decor, and such extra funds as are needed to give it an unusual attractiveness and comfort should be provided.

The needs of the General Library in terms of space were reckoned at 122,000 square feet (77,000 for stacks and 45,000 for reading and study and for staff operations); and the cost, including alterations to the present structure, air-conditioning and equipment, at $3,400,000. Additions and improvements to the libraries of the Woman's College, Divinity School, College of Engineering, Chemistry and Physics-Mathematics were estimated to cost an additional $547,000.

The book fund during the next decade should have at least $1,160,000 in new money, or $116,000 a year more than was spent this year.

New library staff positions which should be created within the next ten years will add more than $100,000 to the annual salaries budget. The report explained that the need for some of the new positions will be contingent upon the size of the book fund.

The most critical needs of the library at this moment are additional shelf space for books and manuscripts and reading and study space for undergraduates. The committee has identified the activities that will utilize the 45,000 square feet needed for other purposes than storage of books. It is important to remember that the General Library building has never been adequate to meet the needs of the University in certain areas. It should now be expanded to receive the books acquired during the next twenty-five years and to provide space for study and working quarters that those consulting and servicing the collections will require.

Examples of the kind of additional space that must be provided in the General Library are:

Extension of the undergraduate reading and study areas which remain virtually unchanged since 1930.

Extension of the Public Catalog and Loan Desk areas, which likewise have not been increased since 1930. (About five cards must be added to the Catalog for each new title acquired by the library; the number of books has increased from 250,000 to 1,390,000 volumes since 1930 when the building was occupied.) The number of people who must use this space has increased about 50 per cent.

The Maps and Documents Room should be expanded to allow for receipt and use of foreign as well as domestic official documents. Emphasis on the Commonwealth countries in the study and research programs of the University makes it desirable to concentrate the official government publications in one area, which is not now possible.

Demand for carrels suggests that an additional one hundred and fifty are needed for graduate students and faculty.

The Technical Processing staff is operating in space twenty-five to thirty per cent smaller than the minimum required for comfortable working conditions and efficient operations. The staff of this division

cannot be further increased until new working space is provided, consequently the flow of materials into the library must remain at about the present level until the building is expanded.

The library lacks departmental study and seminar rooms near the book collections. About nine thousand square feet of space could be effectively used for this purpose.

The Manuscripts Collection has more than doubled in size—from 1,043,000 to 2,800,000 pieces—since the present manuscript quarters were occupied. Three times the present space is needed for storage, for staff and for researchers who come to the University in ever-increasing numbers.

GROWTH OF THE COLLECTIONS

Statistics on the quantity of the material received during the year and the total now available, cataloged and otherwise processed for use, are contained in an appendix. The following titles have been selected from the incoming mass as representative of the important types of material received:

Books

[Anonymous] *Historische und geographische beschreibung des an dem grossen Flusse Mississippi in Nord America gelegenen herrlichen Landes Louisiana . . .* Leipzig, 1720.

[Buonarotti, Filippo] *Osservazioni istoriche sopra alcvni medaglioni antichi.* Roma, 1698.

Hoffman, Georg Franz. *Descriptio et adumbratio plantarum e classe cryptogamica Linnaei quae lichenes dicuntur.* Lipsiae, 1790-1801.

Livius, Titus. *Historiae romanae decades.* Venice, 11 Feb. 1493.

Marolles, Michel de. *Tableaux des temple des muses.* Amsterdam, 1676.

Virginia. Richmond. 1864. *Correspondence between the President and General Joseph E. Johnston, together with that of the Secretary of War and the Adjutant and Inspector General, during the months May, June and July 1863.*

Virginia. Richmond. 1864. *Report of Major General Hindman, of his operations in the Trans-Mississippi District.*

Virginia. Richmond. 1863. . . . *The Stranger's Guide and Official Directory for the city of Richmond. Showing the location of the public buildings and offices of the Confederate State and City Governments, residences of the principal officers, etc.*

Serials

Bombay Natural History Society. *Journal,* 1866-1952; 1959 to date. 50 vols.

Botanical Magazine. Tokyo, 1887 to date. 68 vols.

Bresadola, Giacomo. *Iconographia mycologica.* Milan, 1927-1933. 26 vols.

Bŭlgarska akademiiliga na naukite. Sofia. *Sbornik: Klon istoriko-filologichen i folkloren,* 1913-1940. vols. 1-2, 4, 6-21.

Geografiska annaler. 1919 to date. 39 vols.

Geologische Rundschau. Leipzig, 1910 to date. 46 vols.

Kew Bulletin. London, 1887-1941.

Lietopis' voiny. Petrograd, 1914-1917. 6 vols.

Ottuv slovnik naucny. Praze, 1888-1909. 28 vols.

Plumier, Charles. *Plantarum americanarum fasciculus primus (-decimus).* Amsterdam. 1755-(60).

Révai nagy lexikona. Budapest, 1911-1935. 20 vols.
Revue européene. Paris, 1859-61. 18 vols.
Royal Society of Victoria. Melbourne. *Proceedings*, Series 2, 1888 to date. 66 vols.
Uppsala. Universitet. *Zoologiska bidrag fran Uppsala.* Vols. 1 to date. 32 vols.
Vienna. Albertina. *Beschreibenden Katalog der Handzeichnungen in der graphischen Sammlung Albertina.* Wien, 1926-41. 6 vols.

To the George Washington Flowers Collection of Southern Americana were added 57,686 pieces: 34,294 manuscripts; 2,380 newspapers; 917 books, including thirteen Confederate imprints, 45 broadsides, 42 maps and 28 sheets of music. The maps included the following:

Jansson. *Nova Anglia Belguim et Virginia.* (1645)
Popple, Henry. *A Map of the British Empire in America with the French, Spanish and the Dutch settlements adjacent thereto.* (1740)
Faden, William. *A Plan of the Attack of Fort Sullivan, near Charlestown in South Carolina, by a Squadron of His Majesty's Ships on the 28th of June 1776, with disposition of the King's Land Forces, and the Encampments of the Rebels.* (from the drawing made on the spot.) 1776.
South Carolina. *Port Royal in South Carolina.* (Taken from surveys deposited at the plantation office.) 1777.
Faden, William. *Sketch of the Northern Frontiers of Georgia, extending from the mouth of the river Savannah to the town of Augusta.* 1780.
Faden, William. *A Plan of the Town, Harbour and environs of Charlestown in South Carolina, with all the Channels, Soundings, Sailing Marks* etc. 1780.

Among the manuscript collections acquired were two of special interest to this region:

Frances Warrington Dawson. Charleston, South Carolina. *Papers*, 1842-1958. 5,119 items and 140 volumes.

Mr. Dawson has lived in Paris most of this century and has been close to the governments of both France and the United States. His collection contains many important papers that grew out of this association. Among them are typescripts of his confidential reports to the American Embassy in France 1946-48. His personal friends, whose letters are contained in this collection are Theodore Roosevelt, Rudyard Kipling, Grace King, Auguste Rodin, Georges Ledone, Marshall Joffre and Joseph Conrad. The collection also contains manuscripts of several of Mr. Dawson's published works.

Benjamin Sherman Hedrick. Chapel Hill, North Carolina, and Washington, D. C. 1848-1886. About 6057 items and four volumes.

Because of his anti-slavery views Benjamin Hedrick was dismissed as Professor of Chemistry at the University of North Carolina in 1858. The collection contains much unused source material on this event. During the Civil War and most of the Reconstruction Period Hedrick, an employee in the Patent Office in Washington, aided many distressed North Carolinians. Among his close friends was Governor Worth of North Carolina. The collection contains much of their correspondence. Many of the earlier letters are from Hedrick's grandfather in Iowa and contain comment on national affairs. The Reconstruction Period in North Carolina is well covered by family letters, particularly those of Eliza Morrow Thompson, stepmother of Hedrick's wife, who maintained a boarding house in Chapel Hill.

Abercromby, James Baron Dunfermline. Midlothian County, Scotland. Papers, 1840-1851. 20 items.
Bentinck, William Henry Cavendish, Third Duke of Portland. London. Papers, 1802-ca.1809. 7 items.

Bethell, Richard, First Lord Westbury. London. Papers, 1853-1894. 43 items.
Bligh, John, Fourth Earl of Darnley. Ireland. Papers, 1738-1858. 76 items.
Clark, James Freeman. Boston, Mass. Papers, 1883-1905. 45 items.
Edwards, Frederick. New York, N. Y. Papers, 1915-1921. 229 additional items.
Grenville, William Wyndham, Baron Grenville. Buckingham County, England. Papers, 1792-1810. 34 items.
Rossetti, Dante Gabriel. London. Papers, 1870-1916. 8 additional items.
Smith, Emma Juliana (Gray), and John P. George. Liverpool, England, and Pernambuco, Brazil. Letter Book, 1843-1845.

Gifts continue to play a large role in the growth of the library. During the past year 7,406 books, pamphlets and periodicals, and 42,953 manuscripts were received by gift. Cash gifts totalling $11,218 were made by the Rev. A. Purnell Bailey, the Rev. W. Crompton Bennett, Frances Brown, Harry L. Dalton, William B. Hamilton, J. Welch Harriss, the Methodist Board of Education, Mrs. Estelle F. Spears and J. A. Thomas, Jr. Among the donors of books, periodicals and manuscripts were the following:

Henry Schuman of New York City, a member of the Executive Committee of the Friends, secured as a gift to the library the Prince Lichtenstein Collection of two hundred and fifty volumes, principally theology of the 16th and 17th centuries.

Frances Warrington Dawson, Paris, France. A collection of books and manuscripts, the manuscripts of which are described above.

James W. Cheshire, of Hillsboro. Several broadsides and pamphlets, primarily North Carolina local history.

Professor and Mrs. Merle M. Bevington. A first edition of John Stuart Mill's *A System of Logic.*

Professor Emeritus Malcolm Carroll. One hundred and sixty-four volumes of twentieth century history.

Professor Paul H. Clyde. One hundred and forty-four papers and pamphlets on the Far East.

Professor Calvin B. Hoover. One hundred and fifty titles relating to history, government and economics.

Professor Clarence Gohdes. Fifty books and pamphlets on American literature.

Professor Louise Hall. Sixteen miscellaneous volumes.

Mr. Tom Burns Haber. Columbus, Ohio. A transcript of thirty letters of Housman to Witter Bynner.

Professor Ralph Braibanti. One hundred and twenty-four volumes and fifty-eight periodicals relating chiefly to the political economy of Japan.

Mrs. James A. Thomas presented to the University for the Thomas Room in the Woman's College Library two pieces of Blanc de Chine statuary of the Ch'ien Lung Period. At the same time her son, James A. Thomas, Jr., presented a substantial cash gift in memory of his father for refurbishing and maintaining the Thomas Room.

PREPARATION OF MATERIAL

Routines employed in the acquisition and processing of materials are under constant study and each year changes are made in the interest of saving time and expediting material. Bookkeeping procedures were simplified this year to eliminate some detailed information which made a negligible contribution in view of the time required to record it. Service has not suffered, and twenty hours of student time each week are being saved. The change in procedure for handling certain serials has assigned some additional tasks to sub-professional staff members and relieved professional staff for more specialized work.

The number of items received from all sources during the year are reported in the table below.

	1957-58	*1958-59*
(a) By Purchase		
Books and periodicals (vols.)	36,616	35,474
Manuscripts	39,159	54,294
Microfilm (reels)		
Books	53	88
Manuscripts	109	94
Newspapers	473	978
Serials	73	36
(b) Exchange (exclusive of current periodicals)	2,970	2,667
(c) Gifts		
Federal documents	32,283	31,393
State documents	4,168	4,430
Books	8,394	7,210
Manuscripts	2,981	42,953
Total	127,279	179,617

Serial publications received regularly may be broken down by class and method of acquisition as follows:

(d) Number of serials received currently:

	Newspapers	*Periodicals*	*Serials*(1)	*Total*
Purchase	87	3,848	4,419	8,354
Gift & Exchange	12	1,266	1,888	3,166
Total	99	5,114	6,307	11,520

[1] Exclusive of Law and Medicine.

The library now receives 11,520 serial publications, an increase of 1,013 over last year. Of these, 174 periodicals and 617 serial publications are paid subscriptions and 222 are received by gift or exchange.

USE OF THE COLLECTIONS

An increase of 7.5 per cent in the recorded use of the collections was noted by John P. Waggoner, Jr., assistant librarian. This increase was fairly evenly distributed among the several libraries, but the General Library, Woman's College and Divinity Libraries reported the largest increases. The extended hours and changes in library schedules in response to student demand have been reported elsewhere. In each instance the demand appears to have grown out of a real need on the part of students.

A marked increase—from 873 to 1303—in the number of books borrowed from other libraries for local scholars, was also recorded; likewise was there an increase in the number lent to other libraries—from 3069 in 1957-58 to 3559 in 1958-59. The facilities of the libraries are used by scholars from coast to coast, many of whom consult the materials here. Industry calls upon the Interlibrary Loan Department with increasing frequency for printed materials or photographic copies. The list of companies makes interesting reading, but is too long for this report.

Reference and loan service in the General Library will lose some of its effectiveness in the years immediately ahead as the stacks become more crowded and as the books and journals have to be placed in outside storage. The Circulation Department is improvising wherever possible to delay the time when storage becomes necessary by adding an extra shelf to most sections and placing the books face down on the two lower shelves.

Library instruction to all freshman students and library tours to graduate and medical students were given again last Fall. The freshman instruction was completely revised and colored slides and a movie on the library constituted the instructional material. Members of the Reference Department gave two lectures to each of five groups of freshmen and with far greater effectiveness than in years before.

Use of the collection has been facilitated by two pieces of equipment acquired in the past Summer. The Thermo-Fax Reader-Printer has provided the Newspaper and Photographic Services Department with an effective and relatively inexpensive method of blowing up microfilm into easily legible paper copies that can be used without the aid of reading machines. The faculty has used the machine regularly and the staff, in response to orders, has made 6,077 prints. The other is the Premier Thermo-Fax Copying Machine on which pages from bound volumes may be reproduced. It is simple to operate and has been installed in the Public Catalog Room where readers may make their own copies.

The Library Council has recommended that staff members be assigned to the bookstack entrance to check more carefully on persons entering the stacks and on books brought out. The entrance has been supervised in the past but in an informal manner. Persons coming from the stacks with briefcases are not required to open them, but everyone is expected to submit his books to be charged. Two staff members will be required to provide

this closer supervision. One full time person will be added to the Circulation staff this Fall and much of the time of this new person will be used for tightening the service at this point.

Heavy use continues to be made of the library's facilities through photographic work. During the year 686 orders were received by Edwin Hix in response to which were made 22,650 microfilm frames, 2150 photoprints, 6,077 Thermo-fax prints, 1,755 Cormac prints and 32,447 XeroX-Multilith copies.

FRIENDS OF THE LIBRARY

The annual dinner meeting of the Friends of Duke University Library was held in the Union Ballroom on Tuesday May 5, 1959. The largest crowd in many years—167—gathered to hear Mr. Max Lerner of the New York *Post* and Brandeis University.

The Student Book Collectors' Contest, sponsored by the Friends of the Library, drew its largest number of contestants in the Spring of 1959. The winners were: George C. Hudson, a senior, first prize of fifty dollars; Wallace V. Kaufman, a sophomore, second prize of thirty dollars; and Donald K. Fry, Jr., a senior, third prize of twenty dollars.

The eleventh Divinity School Library Lecture was delivered on March 25, 1959, by G. Ernest Wright, Professor of Old Testament, Harvard Divinity School, who spoke on "Cult and History in Ancient Israel." These lectures were established in 1948 by the Reverend George Brinkmann Ehlhardt, the then librarian of the Divinity School, now librarian of the Theological Seminary of Dubuque, Iowa.

BUILDING NEEDS

Some of the long-range plans for the General Library, as submitted to the Committee on Planning, were described above.

The Woman's College, Divinity, Engineering, Chemistry and Physics-Mathematics libraries will require additional space during the next decade. Expansion of Chemistry and Physics-Mathematics will be urgently needed within two or three years.

The Divinity Library needs 1500 to 2000 square feet of additional space for reading and study and 1000 feet for the Jordan Loan Library, Public Catalog and Loan Desk, and for staff operations.

The Woman's College Library should have one hundred additional seats in order to accommodate adequately the students of the Woman's College. It now seats only 280. The building also needs an elevator to replace the book lift, new lighting fixtures, and a substantial amount of refurbishing.

Air conditioning should be provided for all of the libraries.

The Pearse Memorial Library, serving the Duke Marine Laboratory at Beaufort, N. C., is outgrowing its quarters and the supervisory services

available to it. As the collection grows and the activities of the laboratory make heavier demands upon it, the library will have to expand into a larger area and more staff time be provided for it.

B. E. POWELL
Librarian

STATISTICS

I. INCOME:		
University Appropriations	$621,239.53	
Library Fee Funds	54,564.75	
Endowments and Gifts	27,497.28	
Total Income		$703,301.56
II. EXPENDITURES:		
(a) Books, periodicals, and binding: (General Library, Biology-Forestry, Chemistry, Engineering, Mathematics-Physics)		
Books and Periodicals	$174,039.60	
Binding	22,331.69	
Divinity	13,325.53[1]	
Hospital		
Books and Periodicals	14,736.70	
Binding	2,905.71	
Law		
Books and Periodicals	27,663.85	
Binding	1,838.09	
Woman's College		
Books and Periodicals	20,834.06	
Binding	2,293.37	
Total		$279,968.60
(b) Salaries (for all libraries)		
Regular staff	$337,141.92	
Student assistants	31,504.76	
Total		$368,646.68
(c) Fringe Benefits (T.I.A.A.; F.I.C.A.; Insurance, Hospital and Medical Care)[2]		$ 17,490.16
(d) Equipment, supplies, and transportation		$ 37,196.12
Total Expenditures		$703,301.56

[1] Does not include periodicals, binding, and special items purchased on General Library funds.
[2] Includes GL and WCL only.

III. GROWTH AND HOLDINGS:

(a-1) Distribution by Libraries of Officially Catalogued Materials:

	1957/58	*1958/59*	*Total in Libraries June 30, 1959*
Biology-Forestry	3,399	4,724	67,462[1]
Chemistry	584	559	18,243
Divinity	4,476	4,243	89,861
Engineering	1,177	1,356	27,423
General	32,659	26,618	860,846
Hospital (and Nursing)	3,458	1,800	67,222
Law	2,556	3,158	116,391
Mathematics-Physics	1,164	1,148	21,872
Woman's College	4,387	5,086	121,220
	53,860	48,692	1,390,540

(a-2) Holdings by form of officially catalogued materials as of June 30, 1958 with additions for 1958/59

	Books and Pamphlets	*Music Scores*	*Films*	*Microcards and Microprints*	*Total*
June 30, 1958	1,319,044	8,099	10,254	6,371	1,343,768
Added 1958/59	45,595	559	594	24	46,772[2]
Totals	1,364,639	8,658	10,848	6,395	1,390,540

[1] Includes catalogued holdings (1369 vols.) of Pearse Memorial Library at Beaufort. Does not include the collection of reprints containing some 4084 titles.
[2] Net additions.

(b) Other materials processed and available for use within the library[1]

	Total in Libraries June 30, 1958	*Added 1958/59*	*Total in Library June 30, 1959*
Manuscripts			
Single items	2,665,998	61,949	2,727,947
Volumes	8,516	525	9,041
Maps	28,887	2,728	31,615
Microfilm (reels)	7,702	1,072	8,774[2]
Microcards and Microprints	22,628	6,037	28,665[3]
Photographs, pictures, and prints			
Single items	5,883	317	6,200
Volumes	21	.....	21
Recordings	103	2	105
Music Sheets and Scores	5,002	.....	5,002[4]
Broadsides	4,496	25	4,521
Totals	2,749,236	72,655	2,821,891

[1] Does not include Hospital and Law.
[2] Newspapers & Mss. only; books on film are catalogued and counted as volumes in Appendix III a(1-2).
[3] Physical count. AEC reports and UN mimeographed documents only.
[4] Excludes scores officially catalogued for WCL Music Collection.

THE UNIVERSITY PRESS

To the President of the University:

I am submitting herewith a detailed report of the activities of the Duke University Press during the fiscal year 1958-1959.

Twelve books were published during the year:

Paull F. Baum, *Chaucer: A Critical Appreciation*
William Blackburn, ed., *Joseph Conrad: Letters to William Blackwood and David S. Meldrum*
John S. Bradway, *History of a Law Suit*
Marvin L. Brown, Jr., *American Independence through Prussian Eyes*
Howard F. Cline, *et al.*, eds., *William Hickling Prescott: A Memorial*
Sidney Cottle and Tate Whitman, *Corporate Earning Power and Market Valuation, 1935-1955*
Robert S. Fletcher, *"Eureka": From Cleveland by Ship to California, 1849-1850*
Milton M. Gordan, *Social Class in American Sociology*
Nicholas Mansergh, *et al.*, *Commonwealth Perspectives*
B. U. Ratchford, *Public Expenditures in Australia*
T. H. Silcock, *The Commonwealth Economy in Southeast Asia*
Orville W. Taylor, *Negro Slavery in Arkansas*

Of the authors included above, four are members of our own faculty: Messrs. Baum, Blackburn, Bradway, and Ratchford. Three of the books grew out of Duke's Commonwealth-Studies Center: those by Messrs. Mansergh, Ratchford and Silcock. The Prescott *Memorial* is a reprint of a special issue of one of our journals, the *Hispanic American Historical Review*. Mr. Taylor's *Negro Slavery in Arkansas* is a revision of his Duke doctoral dissertation, which won the Graduate School's publication award. Mr. Whitman is also a Duke Ph.D.

In addition to the above titles the Press reprinted the following:

P. T. Bauer, *Economic Analysis and Policy in Underdeveloped Countries*
Paul G. Brewster, Archer Taylor, *et al.*, eds., *Games and Rhymes, Beliefs and Customs . . .* (Vol. I of the *Frank C. Brown Collection of North Carolina Folklore*)
H. M. Belden and A. P. Hudson, eds., *Folk Ballads from North Carolina* (Volume II of the *Brown Folklore*)
H. M. Belden and A. P. Hudson, eds., *Folk Songs from North Carolina* (Volume III of the *Brown Folklore*)
Jay B. Hubbell, *The South in American Literature*
Simon Kuznets, *et al.*, *Economic Growth: Brazil, India, Japan*

The Bauer volume has been the best seller of the books published thus far for the Commonwealth-Studies Center; over seven hundred copies of this title were distributed to libraries in the United States and Canada by the National Book Foundation. The reprint was paid for by the Center. The other five books reprinted, all large and expensive ones, were financed by the Press out of current funds. Although eleven other titles

were allowed to go out of print during the year, they were all older books for which the demand was slight. The Press was able to keep available all titles for which there was a marked demand. Never before in its history has it reprinted so many in a single year. In addition, reprint rights on four titles previously allowed to go out of print were sold through the efforts of Mr. Owens to Pageant Books in New York: William Braswell's *Melville's Religious Thought,* Herbert R. Brown's *The Sentimental Novel,* Ima H. Herron's *The Small Town in American Literature,* and Ward L. Miner's *The World of William Faulkner.* As well as giving gratifying evidence of continuing interest in some of our backlist titles, sale of these reprint rights also provided the Press and the authors with a modest sum.

Two of our books won awards during the year. Professor Arlin Turner was recipient of the Charles S. Sydnor Award for the best book in Southern history written in 1956-1957; his prize-winning book was *George Washington Cable: A Biography.* Professor William Blackburn's edition of the Conrad *Correspondence* was among the winners in the Southern books competition for the best designed and produced books in the Southeast. The book was designed by John Menapace, Production Manager of the Press.

Books by a number of our faculty had been accepted and were in the press by the end of the fiscal year. Professors Ferguson, Gohdes, Grant, Hanna, Heninger, Ropp and R. S. Smith were included among the authors. In addition, three Duke dissertations that won the Graduate Schools publication award were in press at this time. The authors of these were Professor Hollyday of our Department of History, Mr. Norman Knox, now of the Carnegie Institute of Technology, and Father Francis Canavan. Father Canavan's book also represents the first of the three books in press for the committee headed by Professor Hallowell which administers the grant made by the Lilly Foundation to the University for the purpose of studying the relationship between Christianity and politics. Another volume of the *Folklore* is now being printed. During the year arrangements were made to publish Professor Allan H. Gilbert's three-volume translation of Machiavelli's chief works. Finally, by the end of the year work on a *Festschrift* honoring Professor E. M. Carroll, written by his doctoral students at Duke, was nearing completion.

Six of the seven quarterlies published by the Press showed a slight increase in circulation during the year; one—the *Hispanic American Historical Review*—a slight decrease.

Financially the Press enjoyed its best year to date. For the first time in its history book sales ($60,618.77) exceeded income from subscriptions ($54,417.67), but not total periodical income ($74,681.86). Total income was in excess of $200,000. Book sales were up by 38.7 per cent over the previous year; subscriptions, 2.1; and periodical sales (current single copies and back issues), 81.5 per cent, for an over-all gain of 25.1

per cent. Depletion of stock alone makes it unlikely that we can sell so many back issues again, even if the demand should continue. Mr. Owens, Business Manager of the Press, has been negotiating with several firms to reprint out-of-print issues of several of the periodicals on a royalty basis; prohibitive costs prevent our doing this for ourselves.

The year brought forth no new problems, but did serve to emphasize those of which we were already aware. We now have the nucleus of an excellent professional staff. Once again Mr. Owens has demonstrated his ability in managing the business affairs of the Press; his background in trade publishing has proved invaluable in increasing sales of our books. Mr. Menapace's years in the production department of the Oxford Press have once more paid us dividends and proved the wisdom of the prime recommendation of the Manufacturing Study of the Association of American University Presses: every press should have an experienced production manager.

It is essential that we keep these men and give them adequate assistance as we expand our operations. The place we need to strengthen ourselves next is our editorial department. At present we depend on semi-permanent (at best) workers on a non-professional level. Adding an editorial worker at the professional level is one of our immediate goals.

The most pressing need at present is adequate working space. The only solution possible if we give Mr. Owens needed assistance in his sales work, either by adding a part-time worker or shifting a worker already on the staff, will be for me to take over the cubicle he now occupies and for him and his assistant to move into my office—an unsatisfactory and temporary solution at best. For the past two years we have had someone trying to do editorial work at a table in an upstairs hall. With the extra classrooms added to East Duke this summer, this arrangement will become virtually impossible. Our storeroom, too, is rapidly approaching the saturation point. Finding adequate quarters for the Press is a problem that cannot long be postponed.

Like the rest of the University, the Press spent some time during the year in examining its future. The officers of the Press and the members of its Editorial and Advisory Board were in complete agreement that its primary purpose would continue to be, as it has been in the past, to serve the University community of which it is a part, but at the same time to continue to serve the world of scholarship as a whole. The future of the Press is therefore inseparably linked with the future of the University. While it is hoped that in time a number of productive areas within the University that have heretofore published little through the Press—the Medical School, the Law School, the School of Forestry, and the Divinity School, as well as certain departments (notably the pure sciences) in the Graduate School of Arts and Sciences—will submit more and more manuscripts, it is already apparent that the Press will certainly receive a

large number of manuscripts from junior members of the faculty. Almost inevitably these will be specialized studies of limited interest and small potential sales. The University's generosity to such authors in the form of funds available through the Research Council's Publication Fund will be a continuing need. Although we have no financial problem at present, it is obvious that if we expand a non-profit business, in time we shall need more money, both indirectly through larger grants to the Research Council and in time through an increase in our over-all subsidy.

ASHBEL G. BRICE
Director

THE UNIVERSITY COUNCIL ON RESEARCH

To the President of the University:

The report on the activities of the University Council on Research covering the period beginning July 1, 1958 and ending June 30, 1959 is herewith submitted. A list of the scholarly publications by members of the various departments and schools of the University during the period September 1, 1957 through August 31, 1958 is appended to the report.

The membership of the Council for the year 1958-59 was as follows:

H. J. Oosting, Botany
John Saylor, Chemistry
Shelton Smith, Divinity School
C. B. Hoover, Economics
Clarence Gohdes, English
J. T. Lanning, History
R. S. Rogers, Latin
J. E. Markee, Medicine
D. T. Smith, Medicine
W. M. Nielsen, Physics
Taylor Cole, Political Science
Richard Predmore, Romance Languages

The following officers were elected at the first meeting of the Council during the current report year: Walter M. Nielsen, Chairman; John Tate Lanning, Secretary; and J. E. Markee, H. J. Oosting and Clarence Gohdes to membership on the Executive Committee.

A budget of $47,500 was assigned to the Council by the administrative authorities of the University in April, 1958 for research grants-in-aid during the fiscal year 1958-59. Additional funds were also allocated for necessary travel expense reimbursement during the fiscal year 1958-59. From this budget, 135 research grants were made to members of the faculty at a meeting of the Council held in May, 1958. During the course of the year about 85 members of the various faculties (exclusive of Law and Medicine) will have had a portion of their travel expense associated with the presentation of their research activities or other participation at meetings reimbursed from funds allocated to the Council.

During the year, the editorial work on the compilation of the research publications from Duke University for the year 1956-57 was completed. During this period 584 articles and 10 books and monographs were published.

A study was recently completed of the growth in research activity at Duke University as reflected in the number of articles published in 1934-35, the year the Council was organized, through the year 1956-57. These

data are submitted as an appendix to this report. The significance of our research activity cannot be measured in terms of number of contributions alone. Data of this kind do, however, reflect the increasing interest in research throughout the University. The tabulated data also give the number of books and monographs published over the same period. During the twenty-two year period covered, 8915 articles and 323 books were published by the staff of Duke University.

During the period covered by this report, the Council has approved four subsidy requests for the publication of books and monographs.

WALTER M. NIELSEN
Chairman

PUBLICATIONS OF DUKE UNIVERSITY FACULTIES 1934-'57

	Grad. School & Colleges		*Divinity*		*Law*		*Forestry*		*Nursing*		*Medicine*		*Totals*	
	a	b	a	b	a	b	a	b	a	b	a	b	A	B
1934-'35	100	7	5	1	16	0					31		152	8
1935-'36	123	16	9	1	24	0					57	1	213	18
1936-'37	150	12	4	2	12	1					122	1	288	16
1937-'38	175	13	8	3	17	0					106	1	306	17
1938-'39	178	13	8	1	21	0	10	0			113	1	330	15
1939-'40	147	11	12	0	5	0	9	1			151	0	324	12
1940-'41	168	20	12	1	6	1	7	0			167	0	360	22
1941-'42	112	7	3	2	2	0	7	0			223	1	347	10
1942-'43	122	7	3	0	7	0	11	1			180	3	323	11
1943-'44	126	4	4	1	5	0	5	0			151	1	291	6
1944-'45	129	7	0	0	6	1	5	1			177	0	317	9
1945-'46	169	8	5	1	2	1	5	1			169	4	350	15
1946-'47	154	8	15	1	4	2	2	0			223	1	398	12
1947-'48	194	11	1	0	17	0	8	2			178	2	398	15
1948-'49	190	9	10	3	14	0	0	2			210	2	424	16
1949-'50	181	9	21	2	10	1	2	3			211	0	425	15
1950-'51	152	14	17	1	21	2	2	0			233	2	425	18
1951-'52	222	9	25	1	26	2	9	0			199	1	481	13
1952-'53	242	10	25	0	19	0	4	0	1	0	208	0	499	10
1953-'54	268	15	21	1	17	0	6	1	0	0	233	0	545	17
1954-'55	282	9	35	3	16	0	3	0	0	0	221	1	557	14
1955-'56	311	18	30	5	20	1			1	0	216	0	578	24
1956-'57	301	6	23	1	14	1	1	1	1	0	244	1	584	10
	4196		296		301		96		3		4023		8915	
		243		31		13		13		0		23		323

a and A—articles.
b and B—books.

FINANCIAL REPORT

FINANCIAL REPORT

To the President of the University:

We submit herewith for your examination and information the annual financial report of Duke University, showing in some detail the results of the operation for the year ending June 30, 1959. The entire *Report* is published as Number 1 in Volume 32 of the *Bulletin of Duke University*.

The figures contained in this report have been verified by our certified public accountants.

It will appear from the Statement of Revenue and Expenditures that the University other than the Hospital closed the year with a surplus from operations of $235,361, but that Duke Hospital operated at a net loss of $57,440 making the net operating surplus for the University as a whole $177,921. When compared with previous years these operating results show considerable improvement, particularly in the Hospital operations.

The following summary and comparison of Educational and General receipts and expenditures will be of interest.

	1959		1958	
Revenue	*Amount*	*Per Cent of Total*	*Amount*	*Per Cent of Total*
Endowment income	$ 5,095,011	36%	$4,739,100	40%
Gifts and grants:				
Loyalty funds	262,605	2	235,414	2
For research	4,275,464	30	3,508,935	30
For training programs	1,088,312	7	621,951	5
For the libraries	10,488	.....	3,150	.....
For current expenses	232,895	2	196,449	2
Total gifts and grants	5,869,764	41	4,565,899	39
Tuition and fees	3,812,529	27	3,476,932	30
Sundry:				
Special investment income	103,218	1	76,736	1
Forest operations	19,460	.....	20,832	.....
Other income	807,388	5	383,403	3
Total sundry	930,066	6	480,971	4
Transfers	(1,403,516)	(10)	(1,512,398)	(13)
Total revenue	$14,303,854	100%	$11,750,504	100%
Expenditures				
Administration	$ 887,346	6%	$ 815,884	7%
General operations	382,276	3	383,590	3
Instruction	5,594,501	39	4,869,948	43
Research	3,942,336	28	2,846,589	25
Training programs	707,451	5	561,113	5
Libraries	674,616	5	616,670	5
Forest operations	21,997	.....	20,165	.....

Staff benefits	464,671	3	406,378	4
Transfers to principal of funds	90,093	1	42,089	.....
	12,765,287	90	10,562,426	92
Physical plant	1,478,011	10	928,650	8
Total expenditures	$14,243,298	100%	$11,491,076	100%

The Endowment Income shown above includes income from The Duke Endowment in the amount of $3,000,864 for 1959 and $2,667,069 for 1958.

The Endowment Funds of the University are invested in securities in accordance with an investment policy established by the Investment Committee of the Board of Trustees. The summary below shows the Cost or Amortized Value as well as the Quoted Market Value, by the various Fund Groups.

	Cost or Amortized Value	*Quoted Market Value*
Endowment Funds:		
Pooled cash and securities (Current Fund)	$ 5,570,636	$ 5,620,315
Funds Functioning as Endowment	10,035,111	10,082,588
	15,605,747	15,702,903
Endowment	33,348,526	53,448,062
Endowed Special	1,692,162	2,475,606
Scholarship	2,520,939	3,576,728
Student Loan	413,906	782,427
Total Endowment Funds	53,581,280	75,985,726
Other Funds:		
Current Restricted	1,173,683	1,613,932
Agency	181,817	201,778
Total Other Funds	1,355,500	1,815,710
Total	$54,936,780	$77,801,436

The statements include only those assets to which title actually vests in Duke University and consequently do not include any portion of the indivisible Corpus of The Duke Endowment, the income from which, subject to the terms of the Trust Indenture, accrues to Duke University as one of the several beneficiaries. Nor do the accounts include the principal funds of trusts independently administered for the benefit of Duke University; such as, the Angier B. Duke Memorial, Inc., the Frederic M. Hanes Bequest, the Frederic M. Hanes Memorial Trust, the Albert Anderson Bequest, the James A. Gray Foundation and the Mary Alyse Smith Scholarship Fund.

CONDENSED STATEMENT OF REVENUE AND EXPENDITURES

Fiscal Year ended June 30, 1959

Revenue

EDUCATIONAL AND GENERAL:		
Endowment income	$ 5,095,011	
Loyalty funds (1957-1958):		
Duke University	227,699	
Medical School	34,906	
Gifts and grants for research	4,275,464	
Grants for training programs	1,088,312	
Gifts for the libraries	10,488	
Gifts for current expenses	232,895	
Tuition and fees	3,812,529	
Special investment income	103,218	
Forest operations	19,460	
Other income	807,388	
	15,707,370	
Less amounts transferred to other expendable fund classifications	656,798	
	15,050,572	
Less amounts transferred to balances expendable for designated purposes	746,718	$14,303,854
RELATED ACTIVITIES—hospital revenue		4,850,096
Net revenue from auxiliary enterprises (note 1)		258,326
NON-EDUCATIONAL:		
Gifts for fellowships and scholarships	506,971	
Gifts for miscellaneous purposes	106,719	
Investment income	205,503	
Other income	340,938	
	1,160,131	
Add amounts transferred from other expendable fund classifications	9,082	
	1,169,213	
Add amounts transferred from balances expendable for designated purposes	1,296	1,170,509
Carried forward		$20,582,785

CONDENSED STATEMENT OF REVENUE AND EXPENDITURES

Fiscal Year ended June 30, 1959

Expenditures

EDUCATIONAL AND GENERAL:		
Administration	$ 887,346	
General operations	382,276	
Instruction	5,464,921	
Research and training programs (note 1)	4,649,787	
Libraries	674,616	
Summer sessions	129,580	
Forest operations	21,997	
Staff benefits (note 1)	464,671	
Transfers to principal of Endowed Special Funds	90,093	
	12,765,287	
Physical plant	1,478,011	$14,243,298
RELATED ACTIVITIES:		
Hospital expenditures (note 1)	4,907,536	
Other expenditures—net	83,521	4,991,057
NON-EDUCATIONAL:		
Fellowships and scholarships	721,334	
Miscellaneous	446,256	
Transfers to principal of funds:		
Student Loan Funds	250	
Scholarship Funds	2,669	1,170,509
Carried forward		$20,404,864

CONDENSED STATEMENT OF REVENUE AND EXPENDITURES—Continued

Revenue, Continued

Brought forward		$20,582,785
PLANT FUNDS:		
Gifts	$ 857,364	
Investment income	845	
Received from auxiliary enterprises	262,941	
Transfers from expendable funds:		
Current Fund	640,082	
Current Restricted Funds	6,718	
Endowed Special Funds	916	
	1,768,866	
Less amounts transferred to balances expendable for designated purposes	473,005	1,295,861
		$21,878,646

CONDENSED STATEMENT OF REVENUE AND EXPENDITURES—Continued

Expenditures, Continued

Brought forward		$20,404,864
PLANT FUNDS:		
Capital expenditures	$ 1,003,749	
Maintenance and other expenditures	292,112	1,295,861
		21,700,725
Current Fund net revenue apportioned to following accounts:		
Surplus from operations, other than Hospital, transferred to Reserve for Undistributed Income	235,361	
Deficit from Hospital operations	(57,440)	177,921
		$21,878,646

(1) Staff benefits included in expenditures during the year were as follows:

Administration, faculty and staff	$464,671
Research and training programs	62,462
Hospital	92,524
Auxiliary enterprises	29,975
Total	$649,632

Respectfully submitted,
A. S. BROWER
Treasurer

G. C. HENRICKSEN
Business Manager and Comptroller

UNIVERSITY PUBLICATIONS

SEPTEMBER 1, 1957 TO AUGUST 31, 1958

During the period 577 articles and 18 books and monographs were published. There were eight items in the category of new or foreign editions of works previously published and other works not easily classified. Articles are numbered in Arabic, and monographs, books and more extensive scholarly works are numbered in Roman. Listings in the third category are identified by capital letters.

The list includes the work of all University personnel carried out at Duke University during the report period. It also includes contributions of former personnel who are no longer in residence, but whose publications are credited to Duke.

PUBLICATIONS OF THE MEMBERS OF THE GRADUATE SCHOOL OF ARTS AND SCIENCES AND OF THE UNDERGRADUATE COLLEGES OF DUKE UNIVERSITY FROM SEPTEMBER 1, 1957 TO AUGUST 31, 1958

Alden, John R. History.

I. *The South in the Revolution 1763-1789* (Baton Rouge: State University Press, 1957). 442 pp. (Vol. III in W. Stephenson and M. Coulter, editors, *History of the South* series.)

Anderson, Carl L. English.

II. *The Swedish Acceptance of American Literature* (Philadelphia: University of Pennsylvania Press, and Uppsala: Almqvist & Wiksell, 1957). 157 pp.

Anderson, Lewis E. Botany.

1. —(with H. Crum), "Taxonomic Studies on North American Mosses. VI-XIII," *Journal of the Elisha Mitchell Scientific Society, 72,* 276-291 (May, 1958).

2. —(with V. S. Bryan), "Systematics of the Autoicous Species of *Ditrichum* subg. *Ditrichum*," *Brittonia, 10,* 121-137 (July, 1958).

Anderson, Margaret. Parapsychology.

3. —(with R. White), "ESP Score Level in Relation to Students' Attitude Toward Teacher-Agents Acting Simultaneously," *Journal of Parapsychology, 22,* 20-28 (March, 1958).

Arges, K. Pete. Engineering.

4. —(with J. S. Peck), "Nonferrous Metals and Alloys," in Committee on Engineering Materials, *Engineering Materials* (New York: Pitman Publishing Corporation, 1958). Pp. 505-549.

Banham, Katharine M. Psychology.

5. "Maturity Level for Reading Readiness," *Educational and Psychological Measurement, 18,* 371-375 (1958).

6. —(with E. M. Blumenthal), "A Cerebral Palsied Infant under Treatment," *The Physical Therapy Review, 38,* 323-326 (1958).

Baum, Paull F. English.

III. *Ten Studies in the Poetry of Matthew Arnold* (Durham: Duke University Press, 1958). xiii-139 pp.

7. "Swinburne's 'A Nympholept'," *South Atlantic Quarterly, 57,* 58-68 (Winter, 1958).

8. "Chaucer's Puns: A Supplementary List," *Publications of the Modern Language Association, 73,* 167-170 (March, 1958).

Baylis, Charles A. Philosophy.

IV. *Ethics: The Principles of Wise Choice* (New York: Henry Holt, 1958). x-373 pp.

Bigelow, Lucius Aurelius. Chemistry.

9. —(with A. F. Maxwell and J. S. Fry), "The Indirect Fluorination of Cyanuric Chloride," *Journal of the American Chemical Society, 80,* 548-549 (Feb., 1958).

Black, Martin L., Jr. Economics and Business Administration.

10. "Cooperatives in Australia, Part II," *Cooperative Accountant, 10,* 3-15 (Fall, 1957).

Block, Martin M. Physics.

11. —(with G. G. Slaughter and E. M. Harth), "V-Particle Production by 1.9-Bev π-Mesons," *Physical Review, 109,* 2111-2116 (March, 1958).

Blomquist, H. L. Botany.

12. "The Taxonomy and Chromatophores of *Pylaiella antillarum* (Grunow) DeToni," *Journal of the Elisha Mitchell Scientific Society, 74,* 25-30 (May, 1958).

13. "*Myriotrichia scutata* Blomq. Conspecific with *Ectocarpus subcorymbosus* Holden *in* Collins," *Journal of the Elisha Mitchell Scientific Society, 74,* 24 (May, 1958).

Bolmeier, E. C. Education.

14. "The School Principal's Proper Concept of School Law," *National Association of Secondary-School Principals Bulletin, 42,* 1-8 (March, 1958).

15. "Tort Liability of School Personnel," *American School Board Journal, 136,* 30-32, 77 (March, 1958).

Bookhout, C. G. Zoology.

16. (with J. D. Costlow), "Body Growth versus Shell Growth in *Balanus improvisus*," *Biological Bulletin, 113,* 224-232 (Oct., 1957).

17. —(with J. D. Costlow), "Larval Development of *Balanus amphitrite* var. *denticulata* Broch Reared in the Laboratory," *Biological Bulletin, 114,* 284-295 (June, 1958).

Boyce, Benjamin. English.

18. "An Annotated Volume from Pope's Library," *Notes and Queries,* New Series *5,* 55-57 (Feb., 1958).

19. "History and Fiction in *Panthalia: or the Royal Romance*," *Journal of English and Germanic Philology, 57,* 477-491 (July, 1958).

Bradsher, Charles Kilgo. Chemistry.

20. —(with J. H. Jones), "Aromatic Cyclodehydration. XXXV. Alkoxyl Derivatives of the Acridizinium Ion," *Journal of the American Chemical Society, 79,* 6033-6034 (Nov., 1957).

21. —(with D. J. Beavers), "Some 1,3-Dinitrophenanthrene Derivatives," *Journal of Organic Chemistry, 22,* 1738-1739 (Dec., 1957).

22. —(with L. E. Beavers and J. H. Jones), "Photodimerization of

Acridizinium Salts," *Journal of Organic Chemistry, 22,* 1740-1741 (Dec., 1957).

23. —(with F. C. Brown, E. F. Sinclair and S. T. Webster), "The Structure and Antimicrobial Activity of Some Isothiocyanate Oxides and Sulfides," *Journal of the American Chemical Society, 80,* 414-417 (Jan., 1958).
24. —(with H. Berger), "Aromatic Cyclodehydration. XXXVI. The Synthesis of (±)-Cryptopleurine," *Journal of the American Chemical Society, 80,* 930-932 (Feb., 1958).
25. —(with T. W. G. Solomons), "Acridizinium Ion Chemistry. II. The Diels-Alder Reaction," *Journal of the American Chemical Society, 80,* 933-934 (Feb., 1958).
26. —(with J. H. Jones), "Aromatic Cyclodehydration. XXXVII. Quinolizinium Derivatives Related to the Protoberberine Alkaloids," *Journal of Organic Chemistry, 23,* 430-431 (March, 1958).
27. —(with S. T. Webster), "Further Extension of the Base-Catalyzed Cyclization," *Journal of Organic Chemistry, 23,* 482-483 (March, 1958).
28. —(with F. C. Brown and S. T. Webster), "Some 4-Substituted Thiourazoles," *Journal of Organic Chemistry, 23,* 618-619 (April, 1958).

Bragg, Louis R. Mathematics.

29. "Fundamental Solutions of a Linear Ordinary Differential Equation of the Third Order in the Neighborhood of a Simple Second Order Turning Point," *Duke Mathematical Journal, 25,* 239-264 (June, 1958).

Braibanti, Ralph. Political Science.

V. *International Implications of the Manila Pact* (New York: Institute of Pacific Relations, 1958). 91 pp.

30. "The Southeast Asia Treaty Organization," *Pacific Affairs, 29,* 321-341 (Dec., 1957).

Broadfoot, Winston. Library.

31. "What Is a Library," *North Carolina Libraries, 16,* 119-124 (June, 1958).
32. "Review of North Carolina Non-Fiction, 1956-1957," *The North Carolina Historical Review, 35,* 216-223 (April, 1958).

Brown, Frances Campbell. Chemistry.

———(with C. K. Bradsher, E. F. Sinclair and S. T. Webster), "The Structure and Antimicrobial Activity of Some Isothiocyanate Oxides and Sulfides," *Journal of the American Chemical Society, 80,* 414-417 (Jan., 1958).

———(with C. K. Bradsher and S. T. Webster), "Some 4-Substituted Thiourazoles," *Journal of Organic Chemistry, 23,* 618-619 (April, 1958).

Buckingham, Michael J. Physics.

33. "Theory of Liquid He^3," *Proceedings of the Symposium on Solid and Liquid Helium Three* (Columbus: Ohio State University, 1957). Pp. 50-56.

34. —(with W. M. Fairbank and C. F. Kellers), "Specific Heat of Liquid He^4 Near the Lambda Point," in J. R. Dillinger, editor, *Low Temperature Physics and Chemistry* (Madison: University of Wisconsin Press, 1958). Pp. 50-52.

35. "The Persistatron: A Superconducting Memory and Switching Element for Computors," in J. R. Dillinger, editor, *Low Temperature Physics and Chemistry* (Madison: University of Wisconsin Press, 1958). Pp. 229-232.

36. —(with H. A. Fairbank and W. M. Fairbank), "Cryogenics," *Annual Review of Physical Chemistry, 9,* 27-44 (1958).

37. "Some Comments on the Theory of Liquid He^3," *Il Nuovo Cimento, Series X, 9* (Supplement No. 1), 306-309 (1958).

Budd, Louis J. English.

38. "At the Close of the Gilded Age," in symposium entitled "The Idea of Progress," *Georgia Review, 11,* 278-284 (Fall, 1957).

Cadoret, Remi. Parapsychology.

39. —(with G. H. Wood), "Tests of Clairvoyance in a Man-Dog Relationship," *Journal of Parapsychology, 22,* 29-39 (March, 1958).

40. —(with J. Fahler), "ESP Card Tests of College Students with and without Hypnosis," *Journal of Parapsychology, 22,* 125-136 (June, 1958).

Campbell, Enid. Political Science.

41. "Thomas Hobbes and the Common Law," *Tasmanian Law Journal, 1,* 20-46 (July, 1958).

Carlitz, Leonard. Mathematics.

42. "The Bilinear Generating Function for Hermite Polynomials in Several Variables," *Mathematische Zeitschrift, 68,* 284-289 (1957).

43. "On Some Polynomials of Tricomi," *Bollettino della Unione Matematica Italiana, 12,* 414-417 (1957).

44. —(with W. A. Al-Salam), "Generalized Turan Expressions for Certain Hypergeometric Series," *Portugaliae Mathematica, 16,* 119-127 (1957).

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BULLETIN
OF
DUKE UNIVERSITY



The School of Forestry

ANNOUNCEMENTS FOR 1960-61

VOLUME 32 January, 1960 NUMBER 3

Annual Bulletins

For Bulletin of Information for Prospective Students, apply to *The Registrar,* Duke University, Durham, N. C.

For Bulletin of Undergraduate Instruction, apply to *The Registrar,* Duke University, Durham, N. C.

For Bulletin of The College of Engineering, apply to *The Registrar,* Duke University, Durham, N. C.

For Bulletin of The Graduate School of Arts and Sciences, apply to *The Dean of the Graduate School,* Duke University, Durham, N. C.

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For Bulletin of The Summer Session, apply to *The Director of the Summer Session,* Duke University, Durham, N. C.

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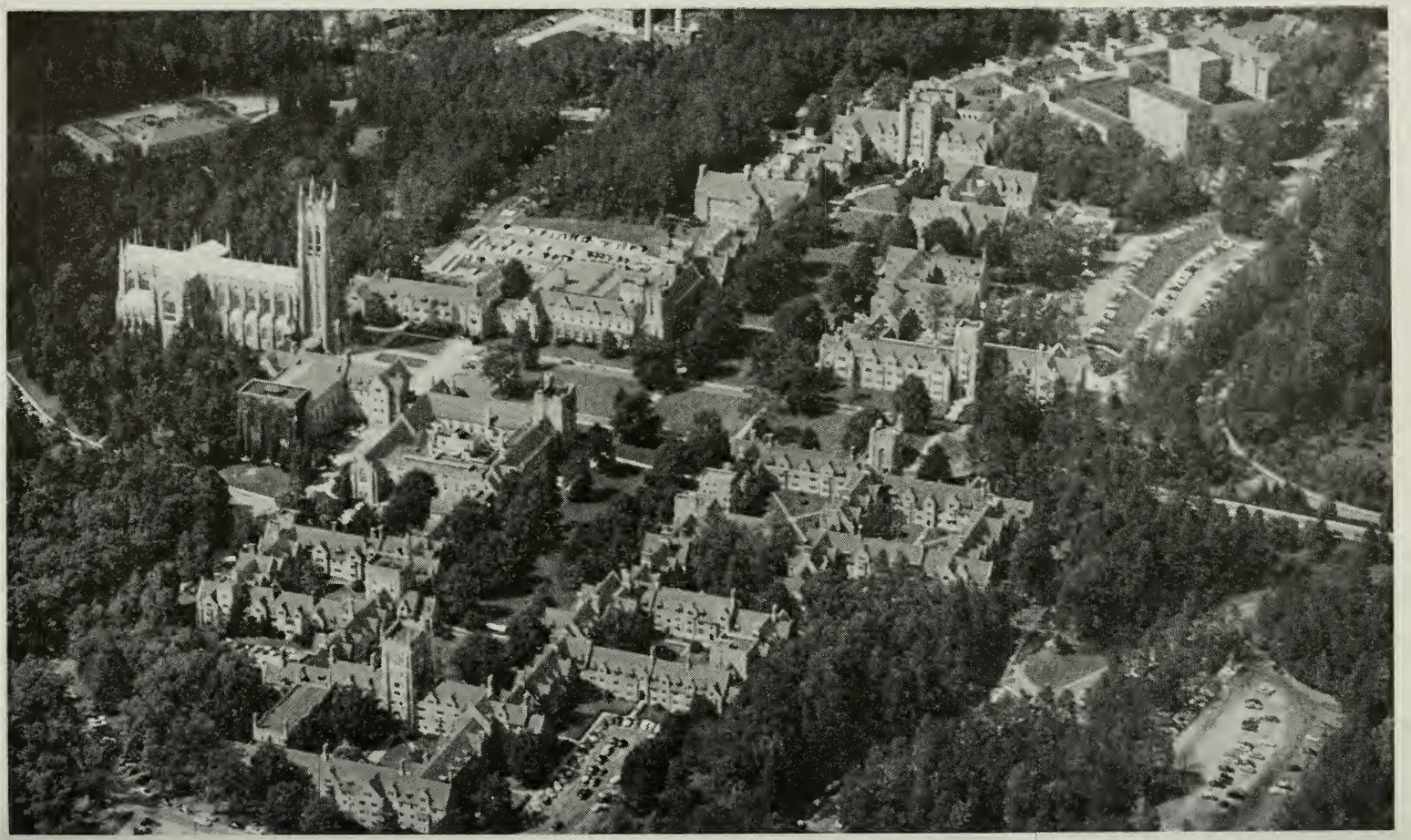
OF

DUKE UNIVERSITY

THE SCHOOL OF FORESTRY

ANNOUNCEMENTS FOR 1960-61

DURHAM, NORTH CAROLINA
1960



DUKE UNIVERSITY: WEST CAMPUS WITH DUKE FOREST IN BACKGROUND

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School of Forestry Calendar

1960

June	10	Friday—Registration of students for summer work in forestry.
June	11	Saturday—Field work in Plane Surveying (C.E. S110) begins.
July	6	Wednesday—French examination for candidates for graduate degrees, 4:00 P.M., 233 Allen Building: Candidates register in the Graduate School Office not later than June 29.
July	11	Monday—Field work in Forest Surveying and Aerial Photo Interpretation (For. S150) begins.
August	8	Monday—Field work in Forest Mensuration (For. S151) begins.
September	8-10	Conference period for new students entering the doctorate program.
September	13	Tuesday—Registration of students in the School of Forestry.
September	15	Thursday—Instruction begins in the School of Forestry.
September	19	Monday—Reading, Vocabulary and Grammar Tests in French and German. French, 9:00 A.M., German, 10:15 A.M., both in 125 Engineering Building. (See page 17 for information.)
October	17-21	German examinations for candidates for doctorate degrees. Candidates register in the Graduate School Office for these examinations not later than October 5.
November	23	Wednesday, 12:30 P.M.—Thanksgiving recess begins.
November	28	Monday, 8:00 A.M.—Instruction is resumed.
December	11	Sunday—Founders' Day.
December	17	Saturday, 12:30 P.M.—Christmas recess begins.

1961

January	3	Tuesday, 8:00 A.M.—Instruction is resumed.
January	6	Friday—French examinations for candidates for doctorate degrees, 4:00 P.M., 125 Engineering Building. Candidates register in the Graduate School Office for these examinations not later than December 16, 1960.
January	17	Tuesday—School of Forestry mid-year examinations begin.
January	27	Friday—School of Forestry mid-year examinations end.
January	31	Tuesday—Registration of students in the School of Forestry.
January	31	Tuesday—Reading, vocabulary and grammar tests in French and German for entering students, second semester. French, 10:30 A.M., German, 11:45 A.M., both in 125 Engineering Building. (See page 17 for information.)
February	2	Thursday—Second semester begins.
March	25	Saturday, 12:30 P.M.—Spring recess begins, School of Forestry Coastal Plain field work begins.
April	4	Tuesday, 8:00 A.M.—Instruction is resumed.
April	8	Saturday, 8:00 A.M.—Coastal Plain field work ends.
April	14	Friday—French examinations for candidates for doctorate degrees, 4:00 P.M. (Place to be announced.) Candidates register in the Graduate School Office for these examinations not later than March 31.
April	15	Saturday—Last day for submitting Doctor of Forestry dissertations.
May	1-6	German examinations for candidates for doctorate degrees. Candidates register in the Graduate School Office for these examinations not later than April 19.
May	15	Monday—Last day for submitting Master of Forestry theses.
May	20	Saturday—Last day for submitting Doctor of Forestry dissertations.
May	31	Wednesday—School of Forestry final examinations end.
June	3	Saturday—Commencement begins.
June	4	Sunday—Commencement sermon.
June	5	Monday—Commencement Address and Graduating Exercises.

Officers of the University Administration



Arthur Hollis Edens, Ph.D., LL.D.
President of the University — 2138 Myrtle Drive

Paul Magnus Gross, Ph.D.
Vice-President in the Division of Education — 3816 Dover Road, Hope Valley

Charles Edward Jordan, A.B., LL.D.
Vice-President in the Division of Public Relations — 615 West Campus Drive

Herbert James Herring, A.M., LL.D.
Vice-President in the Division of Student Life — 2010 Myrtle Drive

Marcus Edwin Hobbs, Ph.D.
Dean of the University — 115 Pinecrest Road

Alfred Smith Brower, A.B.
Treasurer — 614 West Campus Drive

Gerhard Chester Henricksen, A.M., C.P.A.
Business Manager and Comptroller — 216 Forest Wood Drive

John Marion Dozier, A.B.
Secretary — 2510 Wrightwood Ave.

School of Forestry Administration

Ellwood Scott Harrar, M.S., Ph.D.
Dean and Director of Graduate Studies — 2228 Cranford Road

Leon Edward Chaiken, M.F.
Managing Director, Duke Forest — 2737 Dogwood Road

Albert Edward Wackerman, M.F.
Director of the Spring Camp — 3610 Dover Road, Hope Valley

Frank Wilson Woods, M.S., Ph.D.
Research Coordinator, Duke Forest — 1614 University Drive

COMMITTEE OF THE BOARD OF TRUSTEES ON THE SCHOOL OF FORESTRY

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Alumni Relations: C. W. Ralston

Library: R. F. Anderson

Publications: E. S. Harrar

Scholarships and Fellowships: F. X. Schumacher

Student Affairs: J. G. Yoho

Faculty

Roger Fabian Anderson (1951), M.S., Ph.D. *Professor of Forest Entomology*	2528 Perkins Road
Leon Edward Chaiken (1952), M.F. *Professor of Forest Management*	2737 Dogwood Road
Ellwood Scott Harrar (1936), M.S., Ph.D. *Professor of Wood Technology*	2228 Cranford Road
Terry Walter Johnson, Jr. (1954), Ph.D. *Assistant Professor of Forest Pathology*	2408 Prince Street
Paul Jackson Kramer (1931), M.Sc., Ph.D. *James B. Duke Professor of Botany*	2251 Cranford Road
Aubrey Willard Naylor (1952), Ph.D. *Professor of Botany*	881 Louise Circle
Charles William Ralston (1953), M.F., Ph.D. *Associate Professor of Forest Soils*	2531 Wrightwood Avenue
Francis Xavier Schumacher (1937), B.S., D.Sc. *Professor of Forestry*	6 Sylvan Road
John Dennis Sullivan (1959), Ph.D. *Assistant Professor of Wood Technology*	877 Louise Circle
Albert Edward Wackerman (1938), M.F. *Professor of Forest Utilization*	3610 Dover Road, Hope Valley
Fred Myerle White (1959), M.F. *Instructor in Forestry*	Box 4144, Duke Station
Frank Wilson Woods (1958), M.S., Ph.D. *Assistant Professor of Silviculture*	1614 University Drive
James Gibson Yoho (1956), M.F., Ph.D. *Associate Professor of Forest Economics*	2312 Huron Street

Faculty Emeriti

Clarence Ferdinand Korstian, M.F., Ph.D. *Professor Emeritus of Silviculture*	4 Sylvan Road
Frederick Adolphus Wolf, Ph.D. *James B. Duke Professor Emeritus of Botany*	924 Urban Avenue

Associate Faculty

Frederick Charles Joerg (1947), M.B.A. *Professor of Economics*	2116 Pershing Street
Ralph Elton Lewis (1941), M.S. in M.E. *Assistant Professor of Mechanical Engineering*	1401 Alabama Avenue
Kenneth John Tharp (1953), B.S. in C.E. *Assistant Professor in Civil Engineering*	2610 Acadia Avenue

STAFF

Mrs. Nancy A. McMannen *Recorder and Secretary to the Dean*	1913 Hart Street
Fred Myerle White, M.F. *Superintendent, Duke Forest*	Box 4144, Duke Station
Mrs. Edwina Johnson, B.S. in L.S. *Librarian, Forestry-Biology*	1606 Peace Street
Maxwell Leland McCormack, B.S., M.F. *Technical Assistant in Forestry*	Box 5641, Duke Station
Mrs. Elizabeth Keith *Bookkeeper, Duke Forest*	1202 Eva Street
Mrs. Jo W. Russell *Secretary*	804 N. Alston Avenue
Mrs. Jean W. Walker *Secretary*	2531 Rochelle Street
Mrs. Sue P. Woods *Statistical Clerk*	813 Arnette Avenue

Duke Arboretum

Frank Wilson Woods, M.S., Ph.D. *Director*	1614 University Drive



ARCHITECT'S RENDERING OF THE NEW FORESTRY-BIOLOGY BUILDING NOW UNDER CONSTRUCTION

Forestry in Duke University

DUKE UNIVERSITY, located at Durham, North Carolina, comprises Trinity College, the Woman's College, the College of Engineering, the Graduate School of Arts and Sciences, and the professional schools of Forestry, Divinity, Law, Medicine, and Nursing. The University goes back in its origin to 1838, when Union Institute was founded in Randolph County by the Methodists and Friends. In 1851 the institution became Normal College, one of the first schools in America for the training of teachers. In 1859 the name was changed to Trinity College and so continued until 1924, when the College became a part of Duke University.

By virtue of an indenture of trust, executed December 11, 1924, by James Buchanan Duke, a great benefaction was placed at the disposal of humanity by providing for hospitalization, church work in rural communities, and education. The principal feature of the educational provision was the creation of Duke University.

The University, with a student body of over 5,700, occupies two campuses. The Woman's College campus of 108 acres was formerly the campus of Trinity College. About a mile west are the new units of the University, known as the West Campus, totaling 467 acres. It was first occupied in September, 1930.

Forestry in Duke University began early in 1931 when the Duke Forest was placed under intensive forest management and forestry research was initiated. An academic-forestry curriculum, designed for students intent upon pursuing the study of forestry as a profession, was organized in Trinity College of Duke University in 1932. This program was enlarged in 1956 and now includes some 60 cooperating colleges and universities. (See pages 36-38.)

In 1938 the School of Forestry was organized at the graduate level and a curriculum was offered leading to the degree Master of Forestry. Work leading to the degree Doctor of Forestry has been offered since 1940. The School has been fully accredited since its origin. A degree in technical forestry is not offered at the undergraduate level at Duke University.

Graduates of recognized scientific schools or colleges, universities, and professional schools of forestry, and other men who meet the entrance requirements of the school (see page 12) may enroll for training in technical forestry leading to the professional degrees, Master of Forestry and Doctor of Forestry. The Graduate School of

Arts and Sciences, also offers graduate work in certain aspects of forestry leading to the degrees Master of Arts and Doctor of Philosophy. This work is available to graduates of schools of forestry of recognized standing, and to college or university graduates holding a Bachelor's degree with their major work in appropriate subjects.

Students taking undergraduate work and who are planning to enter the School for work towards the Master of Forestry or Doctor of Forestry degree should refer to the section in this announcement (page 12) where entrance requirements are presented.

Educational Facilities

The School of Forestry is housed in the Social Science and Biology Buildings on the West Campus. The programs of the School provide classroom, laboratory, and field instruction in the fundamental disciplines of Forestry. Within the field of Silviculture-Forest Management, specialized training may be elected in economics, entomology, mensuration, pathology, forest soils, silvics, and tree physiology. The Forest Products Technology curriculum offers advanced work in economics, harvesting and processing, seasoning and preservation, timber physics, chemistry of wood, and related work.

General and research laboratories are provided for routine and original studies in all of the subject matter fields. These laboratories are equipped with instruments and facilities for quantitative evaluation of biological materials and processes. Greenhouses on the campus and the close proximity of the Durham Division of the Duke Forest offer opportunities for biological investigations in controlled and natural environments.

Facilities of allied departments of the University are available for advanced work in biochemistry, chemistry, economics, genetics, mathematics, plant anatomy, plant ecology, plant pathology, and plant physiology.

West Virginia Pulp and Paper Company has made available to Duke University a field headquarters for work in the forests of the South Atlantic Coastal Plain. This camp, located 18 miles northwest of Summerville, South Carolina, is used as a base for field instruction in timber harvesting, wood utilization, soils, silviculture, and forest management.

The School periodically sponsors conferences on industrial forest management and other technical subjects. These discussions offer the current viewpoints of many outstanding individuals in forestry and allied fields.

The University Libraries, with 1,292,448 volumes and 2,600,383 manuscripts, provide exceptional resources and facilities for study and

research by undergraduate and graduate students, and by visiting scholars. About 50,000 volumes are added annually, and 80 foreign and domestic newspapers and 4,642 periodicals are received currently. A large collection of microfilms of rare books, newspapers, and periodicals is available.

The Biology-Forestry library (59,428 volumes), Chemistry library (17,192), and Physics-Mathematics library (19,580) are housed for convenience of use in the buildings of these departments. The libraries of the Schools of Divinity (81,268), Law (110,986), Medicine (61,964) and of the College of Engineering (25,001), are also shelved in the buildings of these schools, all on the West Campus.

The Duke Forest

The Duke Forest, of approximately 7,200 acres, is particularly well situated to serve as a field laboratory of the School of Forestry, for much of it is adjacent to the University campus. A five-minute walk will take one well into the nearest parts of the Forest, while even the most distant portions can be reached by automobile in about twenty minutes. Some eighteen miles of improved woods roads make all parts of the Forest readily accessible.

The Forest lies in Durham and Orange Counties near the eastern edge of the Piedmont Plateau. A cross-section of much of the woodlands in the upper coastal plain and lower Piedmont of the Southeast is represented on the Forest with its variety of topography, soil, forest conditions, and patterns of past land use. Elevations range from 280 to 760 feet. The soils are derived from such diverse parent material as metamorphic rock of the Carolina slate formation, granite, Triassic sedimentary rock, and basic intrusives. Nearly one hundred tree species are represented.

Three principal objectives guide the development of the Duke Forest:

1. It shall serve as an outdoor laboratory for instruction in forestry and allied fields.
2. It shall serve as an experimental forest for research in the problems of timber growing and in the sciences basic thereto.
3. It shall be used to demonstrate methods of silviculture and forest management applicable to the region.

Each of the objectives is being met. Short-term research projects are being conducted on the Forest by graduate students in forestry, botany, zoology, and other disciplines. More extensive problems are investigated by the Faculty with student assistance, segments of which may be used by students for observation, analysis and interpretation.

Many of these studies serve admirably as instructional material. The Forest provides additional instructional material, as well as demonstrations on an operational scale, of advanced forest practices developed at Duke and elsewhere.

With the cooperation of the state and local governments, forest fire losses have been reduced to a negligible level. Yet constant vigilance is required, for the region as a whole is one having high fire incidence.

A number of picnic areas are maintained for the use of the university community. These facilities annually attract some ten thousand picnickers and at least that many more hikers who use the Forest for recreation. The Durham and C. F. Korstian Divisions of the Forest, together with several hundred acres of privately owned neighboring lands, are incorporated in an auxiliary state game refuge.

At few other places in America are there provisions for extensive field study and research in forestry literally at the door of a large university. This natural outdoor laboratory, so conveniently located and representative of the region, is a most valuable supplement to the instructional, laboratory, and library facilities of Duke University.

The Arboretum

The Duke Arboretum occupies 90 acres between the East and West campuses. It was recently created to serve as a teaching and research tool for students and scholars of forestry and botany, and to provide a center of interest and information for landscape architects, nurserymen, horticulturists, and the general public.

Long-range plans for development have crystallized and initial plantings have been made. A vigorous program to secure tree seed from all parts of the world, with emphasis on conifers, is underway. After the basic plantings have been established, appropriate underplanting with shrubs will be made to increase its attractiveness and utility.

Requirements for Admission to the School of Forestry

THE admission requirements of the School of Forestry for work toward the MASTER OF FORESTRY degree presuppose that an applicant is either:

1. A graduate of a professional school of forestry, or

2. A graduate of a college or university of high standing, but without professional training in forestry, or

3. A student who has successfully completed the pre-forestry curriculum of one of the colleges (listed on pages 36-38) cooperating in the academic-forestry training program.

Each applicant must present a certified transcript of his academic record showing the courses he has taken, the number of credit hours he has earned and the grades received. The total number of quality points* must be at least two and one half times the total credit hours to meet the minimum scholastic standards required for admission to the School. An applicant also must have satisfactorily completed undergraduate work in minimum amount, as follows:

One year of biology, including at least one semester of botany, or one year of botany.

One year each of English composition and of chemistry.

One course each in physics and in the principles of economics.

Mathematics, through college algebra and trigonometry.

It is urged that an applicant without professional training in forestry present additional credits in the above subjects and in one or more of the following subjects: soils, geology, mineralogy, petrology, climatology, surveying, languages (particularly German and French), sociology, political science, philosophy, psychology, and zoology.

An applicant who is a graduate of a professional school of forestry will present a certified transcript of scholastic record showing the award of a degree. Before registering for the first semester of residence, such applicants will be required to select the branch or branches of forestry in which they wish to concentrate the major part of their work and to prepare their proposed programs in conference with the

* Grades for each hour of college credit are valued in quality points as follows: "A," 4 points; "B," 3 points; "C," 2 points; "D," 1 point; and "F," no points.

appropriate faculty adviser. Ordinarily, graduates of a fully accredited school of forestry should be able to meet all requirements for the Master of Forestry degree in one full school year of resident study; others may require a longer period of residence.

Students must make application for admission in advance of the opening of the school year. Those students entering without acceptable courses in plane surveying, forest surveying, and forest mensuration must take the work in these subjects in the Summer Session, and are required to submit their applications prior to May 1. Students entering with advanced standing in these courses should make application before September 1. Application blanks will be sent upon request made to the Dean of the School of Forestry.

Admission to the School of Forestry for a program of study and research leading to the degree, DOCTOR OF FORESTRY, is granted to a student who has received the degree, Master of Forestry, or its equivalent from a school of forestry of recognized standing, and who has achieved an average of three quality points per hour of credit in his previous graduate studies.

An applicant must file a formal application for admission together with transcripts of his undergraduate and graduate academic records. In his application he should clearly state the branch of forestry in which he desires to concentrate, and if possible, the specific research.

The Committee on Admissions of the School of Forestry, together with the prospective student's major adviser, will determine if the qualifications of the applicant meet entrance requirements.

GRADES. Beginning September 1, 1960, grades in the School of Forestry will be as follows: E (exceptional); G (good); S (satisfactory); F (failing) and I (incomplete). The instructor who gives an I for a course specifies the date by which the student must make up the deficiency. In no case may an extension be granted beyond one calendar year from the date the course ended. If the course is not completed, the statement, NO CREDIT, is made upon the student's permanent record.

Requirements for the Degree of Master of Forestry

THE requirements for the degree of Master of Forestry (M.F.) are governed by the extent of the student's previous professional training. Normally, students who have been awarded the degree of Bachelor of Science in Forestry, or equivalent, at an accredited school of forestry may complete the requirements for the M.F. degree in one academic year. Students who have had no prior professional training in forestry are required to complete one summer session and two academic years of resident study. Graduate work of equivalent grade done in residence at other institutions may, with the approval of the Faculty, be accepted as credit toward the degree, but a minimum of one year of residence at Duke University is required.

The submission of a thesis for the M.F. degree usually is required. In exceptional cases, and with the approval of the Faculty, an acceptable report on a special study may be submitted in lieu of a thesis, credit for which will not exceed three semester hours. Four copies of the thesis, typewritten and bound in accordance with regulations set forth by the Faculty, must be deposited with the Dean of the School of Forestry on or before May 15 of the academic year in which the student expects to obtain the M.F. degree.

No student may take less than fourteen nor more than eighteen semester hours of credit per semester without special permission of the Faculty.

ONE-YEAR PROGRAM

Students with satisfactory undergraduate professional training in forestry qualify for work under the one-year program and have considerable latitude in the selection of courses in a program developed in consultation with their advisers. They may devote a major portion of their time to research under the guidance of one or more members of the Faculty and submit a comprehensive thesis, or they may choose to devote most of their time in advanced courses and seminars. In addition to the courses available in the School of Forestry, students may select courses in other departments of the University which have been approved by the Faculty of the School of Forestry (see page 33).

Thirty semester hours of credit, in which the student must earn

a grade of E or G in at least nine hours, are required for the degree Master of Forestry under the one-year program; however, at least 15 hours of credit (including thesis) must be earned in the School of Forestry.

TWO-YEAR PROGRAM

Students who have had no prior professional training in forestry are required to begin their studies with a summer term of twelve weeks. In addition to the work in the Summer Session a total of not less than sixty semester hours is required for the M.F. degree. The student must earn a grade of E or G in at least nine hours of work in each of the two years. No less than fifty hours of work shall be taken in the School of Forestry.

SUMMER SESSION

	S.H.
Plane Surveying (C.E. S110)	4
Forest Surveying and Aerial Photo Interpretation (F. S150)	4
Forest Mensuration (F. S151)	4

FIRST YEAR

First Semester	S.H.	*Second Semester*	S.H.
Harvesting and Utilization of Forests (F. 211)	4	Harvesting and Utilization of Forests (F. 212)	2
Forest Pathology (F. 223)	3	Theory and Practice of Silviculture (F. 244)	3
Dendrology (F. 241)	3	Wood Anatomy (F. 290)	3
Silvics (F. 243)	3	Economics of Forestry (F. 270)	3
Forest Soils (F. 261)	3	Sampling Methods in Forestry (F. 251)	3
		Forest Entomology (F. 230)	3

SECOND YEAR

Two curricula in forestry are available after the common minimum requirements of the first year have been met. One is the SILVICULTURE-MANAGEMENT combination; the other is in FOREST PRODUCTS. The election of a curriculum to be followed is made prior to the autumn semester of the second year. The required work in each curriculum is as follows:

SILVICULTURE-MANAGEMENT CURRICULUM

First Semester	S.H.	*Second Semester*	S.H.
Forest Management (F. 281)	3	Forest Policy (F. 276)	2
Economic Analysis in Forestry (F. 379)	3	Seminar in Forest Management (F. 386)	2
Forest Protection (F. 283)	2	Seminar in Silviculture (F. 348)	1
Forest-Tree Physiology (F. 201)	4	Soils-Silviculture-Management Field Seminar (F. 368)	2
Thesis research or electives	3-6	Thesis research or electives	8-11

FOREST PRODUCTS TECHNOLOGY CURRICULUM

First Semester	S.H.	*Second Semester*	S.H.
Forest Management (F. 281)	3	Wood Finishes and Finishing (F. 394)	2
Wood-Moisture Relations (F. 291)	2	Time and Motion Studies (Eng 198.2) or Industrial Management (Ec. 105)	3
Wood Preservation (F. 293)	2	Seminar in Forest Products Technology (F. 399)	1
Timber Physics (F. 397)	2	Cost and Quality Controls in Forest Utilization (F. 312)	3
Bonding of Wood (F. 395)	3	Wood Chemistry (F. 396)	2
Thesis research or electives	3-6	Thesis research or electives	4-7

Requirements for the Degree of Doctor of Forestry

THE degree Doctor of Forestry (D.F.) is a professional and research degree conferred on those students who have satisfactorily completed specified requirements of advanced study and research. Although course work is a necessary part of a student's program, the mere accumulation of course credits will not be sufficient for the attainment of this degree. The granting of the D.F. degree is based primarily upon the student's thorough knowledge of a specialized field of study and upon the production of an acceptable dissertation embodying the results of original research.

Work toward the D.F. degree, consisting of advanced studies in a major and a minor field, is offered with majors in the following branches of forestry: forest economics, forest entomology, forest management, forest mensuration, forest pathology, forest soils, forest-tree physiology, forest utilization, silvics, silviculture, and wood and forest products technology. Minors may be in any of these branches of forestry or in other areas of specialized study in the University approved by the Graduate School of Arts and Sciences. Prospective students should correspond with the Dean of the School of Forestry on all matters pertaining to admission to the School.

PROGRAM OF STUDY: A committee consisting of five members of the Faculty will be appointed by the Dean to supervise the work of each student. This committee shall consist of a major adviser, a minor adviser and three other faculty members. The major adviser will serve as Committee Chairman.

The major and minor advisers, in consultation with the student, will prepare a proposed program of study and research which will be presented to the Committee for consideration. Upon its acceptance by the Committee it will then be presented to the Faculty of the School of Forestry for final approval. If in the judgment of the Committee the student's training is inadequate he may be required to remedy such deficiencies by taking certain undergraduate courses as prerequisites to continued graduate study, but which will carry no graduate credit.

The program will consist of courses, seminars, and arranged work approved for graduate credit by the faculty of the School of Forestry, and research. Satisfactory completion of a minimum of 30 semester hours of formalized academic work in which the student must attain a grade of E or G in at least 12 hours is required of all prospective candidates. Credit hour requirements for the major and minor fields are determined by the Committee. No minimum credit requirements are established for the major field, but the minor field must consist of at least 12 semester hours, part or all of which may have been taken as a part of the program for the Master's degree.

FOREIGN LANGUAGES: A reading knowledge of two foreign languages is required. Normally these will be French and German. Spanish or another foreign language may be substituted for either French or German when deemed advisable by the Committee. The foreign language examinations will be conducted by the appropriate language departments of Duke University. Upon recommendation by the appropriate language department, and the approval of the Faculty of the School of Forestry, one of the language requirements may be satisfied by transfer of documented evidence of the successful completion of similar requirements from an approved institution. At least one of the language requirements must be met during or before the student's first regularly enrolled semester at Duke University. Students not able to comply with this regulation will be required to reduce their maximum allowable load in succeeding semesters by 3 semester hours until the first language requirement has been met. The second language requirement must be met before the student is permitted to take the comprehensive preliminary examination. Enrollment in non-credit language courses at Duke University will be considered a part of the student's maximum allowable load in any one semester.

LANGUAGE EXAMINATIONS: On Monday of the fall registration period and on the day before spring registration, reading, vocabulary, and grammar tests in French and German are offered (see the Calendar for hour and place). Any entering student who has not taken these tests may do so. On the basis of his scores the student will

(1) be certified as meeting requirements in these languages, (2) be advised to present himself for the regular reading examinations at the first opportunity, or (3) be advised to enroll in the special reading courses (see below).

READING EXAMINATIONS: At dates listed in the Calendar, reading examinations in French and German are offered. Reading examinations in other languages must be separately arranged.

Students requiring the reading examination at other times must pay a special fee of $5.00 prior to registering in the Graduate Office for the examination. Students who require re-examination at scheduled times will be charged $5.00 for each re-examination; if special times are necessary, the fee will be $10.00.

COMPREHENSIVE EXAMINATION: At least six months before the student expects to receive the D.F. degree, and after he has completed most of his formal course work, he will be required to take a comprehensive examination. The examination will be written in subject areas specified by the Committee and may be followed by an oral examination given by the Committee. The decision as to whether the examination has been passed or failed is the responsibility of the committee.

PRIVILEGE OF RE-EXAMINATION: Should the student fail the comprehensive examination, he may apply, with the consent of his supervisory committee and of the Dean of the School of Forestry, for the privilege of a second examination to be taken no sooner than six months after the date of the first. Failure on the second examination with render the student ineligible to continue his program for the D.F. degree at Duke University.

Upon satisfactory completion of the comprehensive examination the student will be considered a candidate for the D.F. degree.

RESIDENCE REQUIREMENTS: The minimum period of study beyond the M.F. degree, or its equivalent, is two years of academic work of which at least two regular semesters must be spent in full-time study on the campus in Durham. Graduate work of a fragmentary nature taken over a period of several years will not meet this requirement. Course work of equal grade taken at another college or university of approved standing may, with approval of the Faculty of the School of Forestry, be accepted in partial fulfillment but shall not exceed 15 semester hours of the total requirements for the period of study. Such transfer of credit may not under any circumstances be used to reduce the two regular semesters of full-time study which must be spent at Duke University. Course work taken under the cooperative interchange of registration plan between the graduate schools of Duke University and the Consolidated University of North Carolina is considered the same as work taken on the campus in Durham.

A student who has successfully completed the 30 hours of required formalized study, met the language requirements, and passed the comprehensive examination, may, with the approval of his supervisory committee and the Dean of the School of Forestry, continue his research and complete his dissertation *in absentia*. Under this arrangement he is required to register for one hour of research credit each semester until the degree has been awarded.

A student who remains in residence after passing the preliminary examination must register for a minimum of three semester hours of research credit each semester unless his course-seminar registration is at least nine hours, in which case the 3-hour registration requirement is waived.

DISSERTATION: In addition to obtaining adequate training in the field of his specialty, the student must demonstrate his ability to plan and conduct sound, original research. Evidence of this accomplishment must be presented in the form of an acceptable dissertation embodying the results of original work, which is a definite contribution to knowledge.

The subject of the dissertation must receive the approval of the Faculty, and the title filed with the Dean of the School of Forestry on or before October 15 of the academic year in which the candidate desires to take his final examination.

After the dissertation has been approved by the major adviser, and at least 10 days prior to the date set for the final examination, the candidate is required to deposit with the Dean of the School of Forestry the original and three typewritten and temporarily bound copies together with 10 copies of an abstract of the dissertation consisting of not more than 600 words. Following acceptance of the dissertation by the Committee, the student will deposit with the Dean of the School of Forestry on or before April 15 of the academic year in which the student expects to obtain the D.F. degree, the original, unbound copy of the dissertation together with three bound copies, and 10 copies of the approved abstract. The first carbon copy will be deposited in the University Library, the major adviser will receive one copy, and the fourth copy will be returned to the student. The original copy will be sent to University Microfilms, Ann Arbor, Michigan, where it will be reproduced and published on microfilms. Later the original will be returned to Duke University where it will be bound and deposited in the University Library.

The basic requirements for preparing the dissertation are described in the *Manual of Style for Theses and Dissertations* to be obtained from the Duke University Book Store, West Campus. Additional instructions concerning the microfilming, preparation of title page and

the abstract should be obtained from the Dean of the School of Forestry.

At the time the final approved copies of the dissertation and the abstract are deposited with the Dean of the School of Forestry, the candidate must show evidence of having paid a fee of $25.00 to the Treasurer of the University to cover the costs of microfilming.

FINAL EXAMINATION: The final examination will be in defense of the candidate's dissertation and on related subject matter. It will be oral and will be conducted by the supervisory committee. At least six months must elapse between the dates of the preliminary and the final examinations.

Forestry in the Graduate School of Arts and Sciences



MAJOR and minor work is offered in several disciplines of forestry leading to the A.M. and Ph.D. degrees, which are administered by the Graduate School of Arts and Sciences. Work for these degrees may be pursued only in forest-tree physiology, wood anatomy and properties, forest pathology, silvics, forest soils, forest mensuration, forest entomology, and forest economics. Students who have had specialized training in botany or soil science and in allied basic subjects, such as physics, chemistry, geology, and zoology, may pursue graduate study and research only in the specialized fields for which their previous work has qualified them. Students who do not have previous training in forestry will be required to complete a minimum of thirty semester hours of approved work in forestry as a preliminary requirement to advanced study for the A.M. and Ph.D. degrees.

Applicants for admission to the Graduate School must ordinarily have made, in their undergraduate work, not less than a "B" average and must not have concentrated excessively in one field of study to the detriment of a rounded program. They should have met substantially the requirements for the A.B. or B.S. degree at Duke University.

In addition to fulfilling the usual requirements for admission, the applicant must satisfy the Director of Graduate Studies in Forestry as to his liberal arts training, as well as to his preliminary training in the field of forestry.

For detailed information concerning admission to the Graduate

School, and for regulations governing candidacy for the A.M. and Ph.D. degrees, language requirements, residence requirements, and other regulations concerning these degrees, the student should consult the *Bulletin* of the Graduate School of Arts and Sciences.

Tuition, Fees, and Expenses

THE following table shows the general fees and charges collected from all students. All fees for each semester are due and payable, unless otherwise specified, at the time of registration at the beginning of that semester, and no student is admitted to classes until arrangements have been made with the Treasurer of the University for the settlement of fees.

General Fees

Tuition, per semester	$425.00
General Fee, per semester	60.00
Spring trip fee	10.00

Forestry students may obtain admission to all regularly scheduled University athletic contests held on the University grounds during the entire academic year by payment of the athletic fee of $10.00 per year plus any Federal taxes that may be imposed. This fee is payable in the fall semester.

TRANSCRIPTS: A student desiring to transfer from Duke University to another institution is entitled to one transcript of his record. A charge of one dollar is made for each additional copy.

PAYMENTS TO FELLOWS AND SCHOLARS: Payments by the University of stipends to fellows and scholars are made in eight monthly installments, beginning October 20. Fellows and scholars are required to pay the regular tuition fee and such additional fees as are ordinarily required of graduate students.

Living Accommodations

The Men's Graduate Center is available to men of the graduate and professional schools. It contains bedrooms facilities for four hundred men, complete with lounges, study rooms, recreational rooms, post office and dining hall. The rooms are equipped for two persons

and the rental charge for a double room is $400.00 for the academic year, or $200.00 for each occupant, or $100.00 for each occupant each semester.

Rooms are rented for a period of not less than one semester, but with special arrangements, the rate is $1.50 per day with a minimum charge of $25.00.

Room reservations are made through the Housing Bureau only after official acceptance for admission to the University. A $25.00 room deposit is required of each applicant before a room reservation is made. The initial room deposit is effective during the student's residence in the University if attendance is continuous in regular academic years. This deposit will be refunded under the following conditions:

a. Within thirty days after the student has been graduated.
b. Upon withdrawal from the University, provided written notice is received in the Housing Bureau by August 1, for cancellation of a reservation for the fall semester; and not later than January 15, for cancellation of a reservation for the spring semester.
c. When the reasons requiring withdrawal are beyond the student's control.

No refund is made until the occupant has checked out of his room through the Housing Bureau and has settled all of his account with the Treasurer.

A resident student, in order to retain his room for the succeeding academic year, must make application at the office of the Housing Bureau for confirmation of the reservation in accordance with the plan that is published during the school year.

Any exchange of rooms must be arranged at the Housing Bureau. Persons exchanging rooms without the approval of the Housing Bureau will be subject to charges for both rooms.

The authorities of the University do not assume responsibility for the persons selected as roommates. Each student is urged to select his roommate when the room is reserved.

Beds and mattresses (39"x74"), tables, chairs, dressers, mirrors, and window shades are furnished by the University. The student supplies linens, blankets and pillows. Rugs, totaling not more than 54-square-feet, study lamps and curtains are permissible, and if desired, are furnished by the students.

Duke University desires to provide for its students a residential environment conducive to academic achievement, the development of high ideals, and sound character. The institution asks and believes that each student will cooperate in achieving these aims by arranging his personal belongings in an orderly manner, by caring for the buildings and furniture as he would in his own home, and by observing a code based on gentlemanly behavior in an educational environment

which demands repect for all residents. Regulations governing the occupancy of rooms will be supplied directly from the Housing Bureau when room reservations are made. Occupants are expected to abide by these regulations.

Firearms (including air rifles) may be brought into the residence halls only upon written permission and registration with the Dean of Men of Duke University.

Dining Service

The dining facilities on the West Campus include three cafeterias with multiple-choice menus, and the Oak Room where full meals and a la carte items are served. The cost for the academic year ranges from $450.00 upward depending on the tastes of the individual.

In the Men's Graduate Center there is a cafeteria with multiple-choice menus and a Coffee Lounge where sodas and sandwiches are served from 11:30 A.M. to 11:00 P.M. The prices in these dining rooms are the same as on the West Campus.

It is hoped that present rates may be maintained. Charges, however, are necessarily dependent on costs of labor, foods, and materials, and some adjustment may be necessary.

Due to the large number of those served in the dining halls, it is not possible to arrange special diets for individual students. Special diet for the sick is served in the infirmary.

ESTIMATED EXPENSES FOR AN ACADEMIC YEAR: The necessary expenses of a graduate student are moderate: the University dormitories provide thoroughly comfortable and wholesome living conditions at a minimum cost, while all charges made by the University have been kept low. Incidental expenses naturally depend upon the tastes and habits of the individual. The following table summarizes college expenses for one year:

	Low	Moderate	Liberal
Tuition	$ 850.00	$ 850.00	$ 850.00
General Fees	130.00	130.00	130.00
Room-Rent	200.00	200.00	250.00
Board	450.00	500.00	550.00
Laundry	25.00	35.00	45.00
Books	50.00	60.00	70.00
Athletic Fee (optional)	10.00	10.00	10.00
Total	$1715.00	$1885.00	$1905.00

Medical Care

Forestry students who pay at least 3/5 full tuition and fees for the semester or the term of the Summer Session during which illness occurs are covered under the Student Health Program. They are not covered during vacations and their dependents and members of their

family are not covered at any time. Care is provided for men at the Student Health Office in Duke Hospital.

The service provided includes hospitalization in Duke Hospital, when recommended by the Hospital staff, to a limit of thirty days; medical and surgical care under the supervision of a senior physician or surgeon; drugs, X-ray work, and ward nursing. Students pay for board while in the hospital. Excluded from the service are refraction of eyes, treatment of teeth, and of all chronic and pre-existing conditions, and elective surgery.

Forestry students are urged to carry adequate health insurance to supplement Student Health Program services. If students have insurance providing hospitalization, surgical, or medical benefits, the benefits shall be applied to the cost of their medical care. The complete medical facilities of the Duke University Medical Center are available to all members of the University community.

Motor Vehicles

Every motor vehicle operated on the campus by students enrolled in Duke University must be registered at 07 Allen Building within five days after arrival and thereafter must display the proper decal emblem. To register a vehicle, the student must present the following documents: (1) state vehicle registration, (2) state operator's license, (3) evidence of automobile liability insurance as required by North Carolina law ($5,000 per person, $10,000 per accident for personal injuries; $5,000 for property damage).

Student Activities

Forestry students new to Duke University may be reminded that they are welcome to use such recreational facilities as swimming pools, tennis courts, golf course, and to affiliate with choral, drama, and religious groups.

Students are encouraged to maintain broad professional contacts by participation in the activities of the Society of American Foresters, the Forest Products Research Society, and the national honorary scientific society of Sigma Xi.

The social and business events of the Forestry Club provide opportunities for many pleasant extracurricular activities. An active organization of the wives of forestry students offers a regular schedule of social occasions of interest to this group.

Bureau of Testing and Guidance

The University maintains a Bureau of Testing and Guidance which provides a centralized program of educational, vocational, and per-

sonal counseling for students. In addition, the Bureau administers special group testing programs for University schools and departments and serves as the local testing center for a wide variety of national testing programs. The Bureau also carries on programs of research in the field of measurement and counseling.

Appointments Office

Duke University maintains an active Appointments Office which has steadily been placing students in teaching and industrial positions. The services of this office are available without charge to graduate students. Those who are interested in securing employment through the Appointments Office, or those who wish to have available for their own use in securing employment a complete file containing their academic record and pertinent recommendations, should register in this office.

Fellowships, Scholarships, and Assistantships

DUKE UNIVERSITY has allocated a number of fellowships, scholarships, and assistantships to the School of Forestry for the encouragement and financial assistance of men who offer promise of becoming leaders in the forestry profession. These are awarded for high character and marked scholastic ability as judged by education, experience, and personal references.

Holders of the awards will pay tuition and such additional fees as are regularly required.

The awards are of three classes:

FELLOWSHIPS: From five to eight fellowships, with stipends ranging from $1200 to $2400 per academic year. Each recipient must have previously completed work equivalent to that required at Duke University for a Master's degree with a major in forestry or in a discipline basic to forestry. He will devote his time to an approved program of study and research in any of the branches of forestry. He is expected to become a candidate for the degree of Doctor of Forestry or Doctor of Philosophy.

SCHOLARSHIPS: From fifteen to eighteen scholarships with sti-

pends ranging from $1000-$2000 per academic year. Each recipient will normally devote his time to an approved program of study leading to the degree of Master of Forestry, or Master of Arts with a major in forestry.

GRADUATE ASSISTANTSHIPS: One to several graduate assistantships with variable stipends, depending upon available funds and upon whether granted for the academic year only, or the academic year plus the summer. Each recipient will devote half-time to research or other work of the School of Forestry. He will be permitted to enroll for not more than 20 semester hours in an academic year in an approved program of study, or study and research, leading to the degree of Master of Forestry, Master of Arts, Doctor of Forestry, or Doctor of Philosophy.

The following arrangements are common to the above fellowships, scholarships and research assistantships in forestry:

(1) Each applicant must have met the entrance requirements of the School of Forestry and must show high scholarship.

(2) If an applicant has had previous training in forestry, it is highly desirable that he state as specifically as possible the field in which he wishes to study. The definite selection of a major field of work is very helpful to the Committee on Awards.

(3) Application blanks for fellowships, scholarships, and research assistantships may be obtained by writing to the Dean of the School of Forestry, Duke University, Durham, North Carolina. When the blank has been executed by the applicant, it should be returned to the above address. An *official transcript of record* showing college or university credits must accompany it or be forwarded promptly. The application and transcript must be filed not later than March 1 for consideration for the following academic year. Notification of awards is made about April 1. In case vacancies occur, applications submitted on a later date may be considered.

Loans

A number of loan funds have been established for the benefit of the students of Duke University. The most important and largest is the Angier B. Duke Memorial Student Loan Fund, which is administered through an advisory committee of officers of the University. The amount available to be loaned depends upon the income from investments and on the amount repaid on loans previously made to students. The same committee of officers administers the other endowed loan funds of the University.

The committee in approving loans selects those students who, from the standpoint of character, scholastic attainment, personality and degree of financial need, are deserving of consideration.

The following regulations govern the operation of the loan fund program:

1. No loan will be made to a student who violates any of the regulations of the University or whose academic record is not satisfactory to the faculty.

2. As a general policy, a student must have spent one semester in residence before he is eligible to apply for a loan. During this period the loan committee will have an opportunity to acquaint itself with the worth and need of the individual applicants.

3. Loans will be made only to students who are taking approved courses of study that lead to a degree, and all loans must be arranged for not later than one week after the beginning of a semester.

4. Every applicant for a loan must give the names of three references who will be approached by the Student Loan Office. Statements from these references must have been received and made a part of the file before any money will be advanced. None of these references may be a member of a borrower's family.

Courses and Subjects of Instruction

With the exception of the Summer Session courses, odd-numbered courses are usually offered in the autumn semester, and even-numbered courses are offered in the spring semester.

SCHOOL OF FORESTRY COURSES

IN THE SUMMER SESSION

C.E. S110. PLANE SURVEYING.—Use and adjustment of instruments; transit-tape, stadia, and plane table surveying; differential and profile leveling; calculation of bearings, latitudes, departures, and areas; accuracy and errors; celestial observations for azimuth; triangulation. Prerequisites: trigonometry; engineering drawing desirable. *Four weeks, eight hours a day beginning June 11, 1960.* 4 s.h. (w)
MR. THARP

S150. FOREST SURVEYING AND AERIAL PHOTO INTERPRETATION.—Application of plane surveying to forest problems; practice in making boundary, topographic and cover type surveys; details of land ownership and transfer, title search, and deed descriptions. The last two weeks will be spent in the study of the principles of aerial photogrammetry and photo interpretation, and may be taken separately for 2 hours of credit. Prerequisites: Civil Engineering S110, or equivalent. *Four weeks, eight hours a day, beginning July 11, 1960.* 4 s.h. (w)
MR. CHAIKEN

S151. FOREST MENSURATION.—Field studies in methods of measuring content and growth of trees and forest stands; practice in timber estimating, log scaling, use of mensurational instruments, and collection of basic data. *Four weeks, eight hours a day, beginning August 8, 1960.* 4 s.h. (w) MR. SCHUMACHER

FOR SENIORS AND GRADUATES

201. FOREST-TREE PHYSIOLOGY.—The principal physiological processes of trees, including water relations, synthesis and use of foods, and growth phenomena. Prerequisites: Botany 1-2 or equivalent; one year of chemistry. 4 s.h. (w)
MR. KRAMER

211-212. HARVESTING AND UTILIZATION OF FORESTS.—Methods of harvesting, processing, and marketing forest products with emphasis on methods and costs in managed North American forests. A two-week field trip in the spring semester is part of the required work. Students having the equivalent of F. 211-212 may take the field trip by registering for 212A for 1 hour of credit. F-211—4 s.h.; F-212—2 s.h. (w) MR. WACKERMAN

216. LUMBER MANUFACTURE.—Methods of processing logs for sawn products with emphasis on the principles involved in obtaining maximum volume and quality yield for large and small mills; trends in lumber consumption by regions; use of waste for by-products; the development of new lumber products; and industry problems. Prerequisite: Forestry 211-212 or equivalent. 3 s.h. (w) MR. WACKERMAN

223. FOREST PATHOLOGY.—Infectious and non-infectious diseases of forest trees, and related deterioration of forest products. Field and laboratory study of symptoms, etiology, and control. Prerequisites: Botany 1-2, or equivalent. 3 s.h. (w) MR. JOHNSON

230. FOREST ENTOMOLOGY.—Principles of protecting forests from insect attack; character of insect damage to forest trees and their products; identification and biology of important species; survey methods and control. 3 s.h. (w)
MR. ANDERSON

232. FOREST-PRODUCTS ENTOMOLOGY.—Recognition of insect damage to wood products; etiology, biology and control of important species. 2 s.h. (w)
MR. ANDERSON

241. DENDROLOGY.—Nomenclature, classification, and identification of woody plants with special reference to species indigenous to southeastern United States and other important forest regions of temperate North America. Laboratory and field work. Prerequisite: one year of biology. 3 s.h. (w)
MR. HARRAR AND MR. WHITE

243. SILVICS.—Ecological foundations of silviculture with special reference to forest site factors; influence of forests on their environment; growth and development of trees and stands; origin, development, and classification of forest communities; methods of studying forest environments. Desirable prerequisites: plant physiology, plant ecology, and Forestry 261, or equivalents. 3 s.h. (w)
MR. WOODS

244. THEORY AND PRACTICE OF SILVICULTURE.—Principles governing natural regeneration and treatment of forest stands and their application; reproduction methods, intermediate cuttings, and cultural operations. Field practice includes marking for various kinds of cuttings, cultural treatments, and study of managed stands in the Duke Forest. Prerequisite: Forestry 243 or equivalent. 3 s.h. (w) MR. WOODS

245. REGIONAL SILVICULTURE.—Application and comparison of silvicultural practices to principal commercial forest species, types and regions of temperate North America. Prerequisite: Forestry 244 or equivalent. 1 s.h. (w) MR. WOODS

248. FOREST REGENERATION.—Fundamentals and practices of regenerating forest stands. Genetic control through recently developed propagating techniques; seed handling in the field, and during preparation for use; techniques for large production tree nurseries; the use of heavy equipment, chemicals, and fire for site preparation and timber stand improvement; recent developments in direct seeding and planting. 3 s.h. (w) MR. WOODS

251. SAMPLING METHODS IN FORESTRY.—Statistical background for solution of sampling problems with special references to sample inventory of a forest property. Offered both semesters. Prerequisite: Forestry S151. 3 s.h. (w)
MR. SCHUMACHER

257. DESIGN OF FORESTRY EXPERIMENTS AND ANALYSIS OF DATA.—Role of experimental design in field and laboratory, and statistical analysis of data as aspects of the scientific method in forestry research. 5 s.h. (w) MR. SCHUMACHER

261. FOREST SOILS.—Origin, development, and classification of soils with special emphasis on those developed in humid climates; morphological, physical, and chemical properties of soils in relation to growth of trees; effect of forests on soils. Prerequisites: Chemistry 1 and 2, and Physics 1, or equivalent; physical geology, mineralogy, petrology, and analytical chemistry are also desirable. 3 s.h. (w)
MR. RALSTON

270. ECONOMICS OF FORESTRY.—Principles of economics used in the analysis of factors affecting the supply of forest products, pricing of stumpage and primary forest products, factors affecting the demand for forest products, economic characteristics and problems of the major forest products industries; analysis of such specific private forestry problems as marketing, forest ownership pattern, taxation, credit, risk, and economic fluctuations. Prerequisite: at least one course in the principles of economics. 3 s.h. (w) MR. YOHO

272. MARKETING FOREST PRODUCTS.—Methods of selling and distributing lumber, timber, and other important forest products in domestic and foreign trade; trade association functions; regional competition for markets; and transportation problems. Prerequisites: Forestry 211-212 and 270 or equivalents. 2 s.h. (w)
MR. WACKERMAN

276. FOREST POLICY.—Objective study and analysis of the development of public land and forestry policies in the United States, present policies of public and private forestry organizations, and current policy issues in the light of economic and other criteria. Prerequisites: Forestry 281, 283. 2 s.h. (w) MR. YOHO

281. FOREST MANAGEMENT.—Principles of organizing forest properties for systematic management; use of data obtained in surveys and inventories; principles of forest regulation, including a study of normal and actual forests, rotations, cutting cycles, and methods of regulating the cut in even-aged and all-aged forests for sustained yield; introduction to the preparation of premliminary forest management plans. Prerequisites: Forestry S150, S151, or equivalents. 3 s.h. (w) MR. CHAIKEN

283. FOREST PROTECTION.—Principles of forest protection; causes, character and effects of forest fires; principles of forest fire prevention, presuppression and suppression; fire control costs and fire plans; protection against domestic animals, wildlife, and atmospheric agencies. 2 s.h. (w) MR. CHAIKEN

285. FOREST-GAME MANAGEMENT.—Principles of management for the sustained production of desirable game and fur animals on forest lands; characteristics and biology of important species. 2 s.h. (w) MR. ANDERSON

286. FOREST-RANGE MANAGEMENT.—Principles of livestock management by which sustained maximum use can be obtained from forest grazing lands. 2 s.h. (w) MR. ANDERSON

290. WOOD ANATOMY.—Study of the physical features and the gross and minute structural characteristics of wood leading to the identification of the commercial woods of the United States, and the important tropical woods used in American wood-working industries. Elementary microtechnique. Prerequisites: one year of biology; Forestry 241 or equivalent. 3 s.h. (w) MR. SULLIVAN

291. WOOD-MOISTURE RELATIONS.—Physical principles underlying the response of wood to moisture and its removal; the concept of equilibrium moisture content. Principles and methods involved in drying lumber and other wood products as a step in preparing them for use. Prerequisites: Forestry 211-212, and 290 or equivalents. 2 s.h. (w) MR. WACKERMAN

292. MICROTECHNIQUE OF WOODY TISSUE.—Preparation of wood for microscopic study including sectioning, staining, and mounting techniques; elementary photomicrography. Prerequisite: Forestry 290 or equivalent. 2 s.h. (w) MR. HARRAR

293. WOOD PRESERVATION.—Principles, methods, and materials used in treating wood to increase its durability, service-life, and fire resistance. Prerequisites: Forestry 211-212 and 290, or equivalents. 2 s.h. (w) MR. WACKERMAN

201A. TO 293A. SPECIAL STUDIES IN FORESTRY.—Work on the same level as the foregoing Senior-Graduate courses to meet the needs of individual students. Credits and hours to be arranged. THE STAFF

FOR GRADUATES

301, 302. ADVANCED STUDIES IN FORESTRY.—Credits to be arranged. To meet individual needs of graduate students in the following branches of forestry:

A. SILVICS.—Prerequisites: Forestry 241, 243, and 244 or equivalents. MR. WOODS

B. FOREST SOILS.—Prerequisite: Forestry 261 or equivalent. MR. RALSTON

C. SILVICULTURE.—Prerequisites: Forestry 244, 245, and 246 or equivalents. MR. WOODS

D. FOREST MANAGEMENT.—Prerequisite: Forestry 281 or equivalent. MR. CHAIKEN

E. FOREST ECONOMICS.—Prerequisite: Forestry 270 or equivalent. MR. YOHO

F. PROPERTIES OF WOOD.—Prerequisites: Forestry 241, and 290 or equivalents. MESSRS. HARRAR AND SULLIVAN

G. FOREST MENSURATION.—Prerequisites: Forestry 251, and 352 or equivalents. MR. SCHUMACHER

H. FOREST ENTOMOLOGY.—Prerequisite: Forestry 230 or equivalent. MR. ANDERSON

I. FOREST UTILIZATION.—Prerequisite: Forestry 211-212 or equivalent. MR. WACKERMAN

J. DENDROLOGY.—Prerequisite: Forestry 241 or equivalent. MR. HARRAR

K. FOREST-TREE PHYSIOLOGY.—Prerequisites: plant physiology, plant ecology, and silvics. MR. KRAMER

L. FOREST PATHOLOGY.—Prerequisites: Plant physiology and Forestry 223 or equivalents. MR. JOHNSON

312. COST AND QUALITY CONTROLS IN FOREST UTILIZATION.—Principles and methods of obtaining greatest efficiency of operations and maximum product value in harvesting and processing forest products; factors governing the relation of tree size to net stumpage values; and the application of these principles and methods in the solution of actual case problems. Prerequisites: Forestry 211-212 and 270 or equivalents. 3 s.h. (w) MR. WACKERMAN

331. TOXICOLOGY OF INSECTICIDES.—Study of the physical, chemical and biological properties of materials used to destroy insects. Formulation, toxicology and insect physiology as related to insecticide action are emphasized. Prerequisites: one course in entomology; organic chemistry is recommended. 3 s.h. (w) MR. ANDERSON

332. ECOLOGY OF FOREST INSECTS.—Study of the environmental factors as they influence insect population development. Both the physical and the biotic aspects are considered on the basis of field and laboratory experimental methods. Prerequisite: Forestry 230 or equivalent. 3 s.h. (w) MR. ANDERSON

333. TAXONOMY OF FOREST INSECTS.—Principles of insect classification and nomenclature with the laboratory work concentrated on the collection, preservation and identification of both the adult and immature forms of the more important groups of forest pest species. Prerequisite: Forestry 230 or a course in general entomology. 3 s.h. (w) MR. ANDERSON

348. SEMINAR IN SILVICULTURE.—Arranged primarily to give graduates of other schools of forestry special training in the silviculture of the forests of the South. All men taking this course should also register for Forestry 368. Prerequisite: At least one course in silviculture. 1 s.h. (w) MR. WOODS

352. ANALYSIS OF FOREST MEASUREMENTS.—Empirical equations and curve fitting appropriate for construction of timber yield tables, tree volume and taper tables; significance tests and graphical solution of equations. Assignments require operation of calculating machines. Prerequisite: Forestry 251. 3 s.h. (w) MR. SCHUMACHER

357, 358. RESEARCH IN FORESTRY.—Credits to be arranged. Students who have had adequate training may do research under direction of members of the Faculty in the branches of forestry indicated under courses 301, 302 with the same prerequisites as thereunder noted. Each branch to bear the same letter designation as under courses 301 and 302. STAFF

362. FOREST SOIL PHYSICS.—Analysis of the physical properties of soil related to the growth and development of forest trees. Consideration is given to the significance of soil moisture, temperature, aeration, and structural characteristics in the analysis of forest growth relationships. Prerequisite: Forestry 261. 3 s.h. (w). Offered in alternate years with Forestry 366; offered in spring of 1960. MR. RALSTON

364. SOIL CLASSIFICATION AND MAPPING.—Classification of soils as natural bodies. Mapping of soils, land use classes and forest site classes; field study will be made of soils in either the coastal plain or mountains. Prerequisite: Forestry 261. 2 s.h. (w) MR. RALSTON

366. FOREST SOIL FERTILITY.—The relationships of soil fertility factors in the growth of forest trees. Emphasis is placed on the analysis of soil factors related to the mineral nutrition of trees. Prerequisite: Forestry 261; analytical chemistry is recommended. 3 s.h. (w). Offered in alternate years with Forestry 362.
MR. RALSTON

368. SOILS-SILVICULTURE-MANAGEMENT FIELD SEMINAR.—Approximately two weeks at spring camp studying soils silviculture, and forest management in the coastal plain. Prerequisites: Forestry 244, 261, and 281 or equivalents. 2 s.h.
MESSRS. CHAIKEN, RALSTON AND WOODS

378. SEMINAR IN FOREST ECONOMICS.—Examination and discussion of the application of economic concepts in forestry, the potential contribution of economic analysis to private and public forest management; current research in forest economics. Prerequisites: Forestry 270 and 379 or consent of the instructor; advanced courses in economics and economic theory are desirable. 2 s.h. (w)
MR. YOHO

379. ECONOMIC ANALYSIS IN FORESTRY.—Principles of economics of particular value to problems of resource allocation and efficiency in private forest management based on a static and dynamic firm theory approach, linear programming and activity analysis. Development of production principles applicable to forestry problems in use of land, labor and capital; resource and production combinations; production location and timing; cost structure and asset control; uncertainty and expectations. Prerequisites: Forestry 270 or consent of instructor. 3 s.h. (w) MR. YOHO

386. SEMINAR IN FOREST MANAGEMENT.—Examination and analysis of techniques employed in the management of industrial and public forests, particularly in the South; discussion of problems of large scale intensive forest management. Prerequisites: Forestry 245, 281, and 379 or equivalents. 2 s.h. (w)
MR. CHAIKEN

394. WOOD FINISHES AND FINISHING.—Preparation of wood and wood surfaces for application of finish coatings; the physical and chemical properties of finishing materials; equipment and methods of application; overlays, decals, and printing; laboratory control and qualitative evaluation of finished surfaces; finishing characteristics of various species of wood. Prerequisites: Forestry 290, 397 or equivalents; 1 year of organic chemistry also desirable. 2 s.h. (w) MR. SULLIVAN

395. BONDING OF WOOD.—Preparation of veneers and lumber for bonding; types and characteristics of modern adhesives used in the manufacture of plywood and laminates; cold and hot pressing procedures; use of electronic heating; bag molding techniques; manufacture and properties of transmuted wood; inspection and testing procedures. Prerequisite: Forestry 290 or equivalent. 3 s.h. (w)
MR. SULLIVAN

396. CHEMISTRY OF WOOD.—A study of the chemical constituents of wood including cellulose and its derivatives, lignin and the lignin-cellulose bond, the hemicelluloses, and the extractives; hydrogenation and hydrolysis of wood; cell wall chemistry. Prerequisites: Forestry 290 or equivalent, one course in college physics; organic chemistry desirable. 2 s.h. (w) MR. SULLIVAN

397. TIMBER PHYSICS.—The physical properties of wood in relation to electricity, heat, light, moisture, and sound; the mechanical properties of wood; influence of site, growth, and anatomy upon strength and quality of wood; standard timber testing procedures. Prerequisites: Forestry 290 or equivalent, one course in college physics, mathematics through calculus desirable. 2 s.h. (w) MR. SULLIVAN

398. TROPICAL WOODS.—A study of the properties of various groups of tropical woods with particular emphasis upon those used in marine construction, and for lumber, plywood and furniture. Prerequisite: Forestry 290 or equivalent. 2 s.h. (w) MR. HARRAR

399. FOREST PRODUCTS SEMINAR.—Examination and discussion of new and recent developments in the field of forest products. Prerequisites: Forestry 270, 290, 291, 293, 395, 397 or equivalents. 1 s.h. (w) STAFF

OTHER RELATED COURSES

A student in the School of Forestry, may, with the approval of the faculty of the School of Forestry and the Director of Graduate studies of the department concerned, include any of the following courses offered in the Graduate School of Arts and Sciences for which he has had adequate preparation. The student is referred to the *Bulletin* of the Graduate School of Arts and Sciences for the complete descriptive content of each course.

BOTANY

Professor P. J. Kramer, Director of Graduate Studies

	S.H.
202. Genetics	4
203. Plant Cytology	4
204. Advanced Plant Anatomy	4
216. Botanical Microtechnique	4
221. Introductory Mycology	4
252. Plant Metabolism	3
254. Plant-Water Relations	3
255. Advanced Taxonomy	4
256. Community Analysis and Classification	3
257. Principles of Plant Distribution	3
258. Physiology of Growth and Development	3
259. Environmental Measurements	3
305. Vegetation of North America	3

CHEMISTRY

Professor C. K. Bradsher, Director of Graduate Studies

	S.H.
206. Elements of Theoretical Chemistry	4
215. Advanced Inorganic Chemistry	3
216. Nuclear Chemistry	2
233. Instrumental Analysis	2
234. Chemical Instrumentation	2
251. Qualitative Organic Analysis	2 or 3
252. Advanced Organic Preparations	2
261-262. Physical Chemistry	8
303. Thermodynamics	3
304. Physical Chemistry of Reactions	3
341, 342. Advanced Organic Chemistry	8
350. Organic Reactions	2
351-352. Advanced Synthetic Organic Chemistry	2
360. Polymer Chemistry	2

CIVIL ENGINEERING

Professor R. S. Rowe, Director of Graduate Studies

	S.H.
CE 201. Theoretical and Applied Mechanics	3
CE 202. Advanced Mechanics of Materials and Experimental Stress Analysis	3
CE 231. Structural Theory and Analysis	3
CE 242. Hydraulic Engineering	3

ECONOMICS

Professor J. J. Spengler, Director of Graduate Studies

	S.H.
218. Business Cycles	3
233. State and Local Finance	3
237-238. Statistical Methods	6
240. National Income	3
243. Mathematical Economics	3
244. Introduction to Econometrics	3
256. Labor Legislation and Social Insurance	3
262. Trade Unionism and Collective Bargaining	3
265. International Trade and Finance	3
268. Competitive versus Monopolistic Enterprise	3

275-276. Advanced Industrial Accounting and Mgt. 6
300. Introductory Mathematical Economics 3
303. Economic Analysis 3
304, 305. Seminar in Money and Banking 3
311-312. History of Political Economy 6
313-314. Seminar in Economic .. .. .. Theory 6
315. Seminar in Economic Systems ... 3
316. Seminar in Economic Functions of the State 3
317. Seminar in Demographic, Populations and Resource Problems 3
319. Seminar in the Theory and the Problems of Economic Growth and Change 3
320. Seminar in Trade Cycles, Employment, and Income Theory 3
329. Federal Finance 3
330. Seminar in Public Finance 3
331. Seminar in Economic History ... 3
355. Seminar in Labor Economics ... 3
358. Seminar in Labor Market and Related Analysis 3
365. Seminar in International Trade . 3
386. Seminar in Latin-American Economic Problems 3
389. Seminar in Industrial and Governmental Problems 3
401. Seminar on the British Commonwealth 3

ELECTRICAL ENGINEERING

Professor C. R. Vail, Director of Graduate Studies

	S.H.
EE 201. Energy Systems	3

MATHEMATICS

Professor J. H. Roberts, Director of Graduate Studies

	S.H.
205. Algebra from an Advanced Standpoint	3
211. Finite Mathematics	3
212. Mathematical Analysis	3
213-214. Modern Algebra	6
221. Digital Computer	3
222. Introduction to Mathematical Analysis	3
247-248. Arithmetic of Polynomials	6
286. Mathematics for Chemists and Physicists	3
291-292. Theory of Functions	6
325-326. Real Variable	6

MECHANICAL ENGINEERING

Professor J. N. MacDuff, Director of Graduate Studies

	S.H.
ME 201. Theoretical and Applied Mechanics	3
ME 202. Theoretical Thermodynamics	3
ME 222. Analysis of Heat Transfer ..	3

PHILOSOPHY

Professor Bernard Peach, Director of Graduate Studies

	S.H.
241. Logic	3

PHYSICS

Professor H. W. Lewis, Director of Graduate Studies

	S.H.
201-202. Mechanics	6
213-214. Contemporary Physics	6
217-218. Advanced Physics Laboratory	2-6
303-304. Thermodynamics and Statistical Mechanics	6
340. Structure of Matter.....	3

POLITICAL SCIENCE

Professor R. R. Wilson, Director of Graduate Studies

	S.H.		S.H.
207. American Constitutional Law and Theory	3	241. Administrative Management	3

SOCIOLOGY

Professor A. C. Kerchkoff, Director of Graduate Studies

	S.H.		S.H.
233. Rural Sociology	3	248. Pressure Groups and Public Relations	3
246. Public Opinion and Propaganda	3		

Cooperative Plan of Study with Selected Colleges and Universities

Since its inception the Duke School of Forestry has had the cooperation of Trinity College (the men's undergraduate college of arts and sciences of Duke University) in preparing students for professional careers in forestry. Under the plan, a student devotes his first three years to a coordinated and carefully integrated program of study in the basic arts and sciences in Trinity College. The summer between his junior and senior year and the two following school years are spent in the School of Forestry. Upon the successful completion of this five-year course of study, a student has earned the Bachelor of Science degree from Trinity College and the professional Master of Forestry degree from the Duke School of Forestry.

Based upon the experience and success of this cooperative program with Trinity College, the School of Forestry in 1952 initiated similar programs of collaboration with a selected group of colleges and universities located throughout the United States. These programs offer students the numerous advantages of a broad background in liberal arts and sciences as preparation for later professional training. A student intent upon following such a course of study should make application to one of the colleges listed on pages 36-38. Admission requirements and other information pertinent to matriculation may be obtained from each of these institutions. Not later than the end of the first semester of the third year in the college or university of his choice, the student must make formal application for admission to the Duke School of Forestry. To qualify for admission under these programs, a student must have followed a planned course of study arranged in consultation with his adviser, must have the official recommendation of his college, and must meet the minimum requirements for admission to the Duke School of Forestry.

Institutions Cooperating with the School of Forestry in Forestry Training

ALABAMA

Howard College	Birmingham 6

COLORADO

Colorado College	Colorado Springs

FLORIDA

Florida Southern College.....Lakeland
Rollins College.....Winter Park
Stetson University, College of Liberal Arts.....DeLand

ILLINOIS

Illinois Wesleyan University, College of Liberal Arts.....Bloomington

INDIANA

Butler University, College of Liberal Arts and Sciences.....Indianapolis 7
DePauw University, College of Liberal Arts.....Greencastle
Indiana Central College.....Indianapolis 27

IOWA

Iowa Wesleyan College.....Mount Pleasant

KANSAS

Baker University.....Baldwin

KENTUCKY

Centre College of Kentucky.....Danville
Kentucky, University of, College of Arts and Sciences.....Lexington

LOUISIANA

Centenary College of Louisiana.....Shreveport

MARYLAND

Western Maryland College.....Westminster

MICHIGAN

Albion College.....Albion

MISSISSIPPI

Millsaps College.....Jackson

MISSOURI

William Jewell College.....Liberty

NEBRASKA

Doane College.....Crete

NEW JERSEY

Drew University, College of Liberal Arts.....Madison

NEW YORK

Hofstra College.....Hempstead, Long Island

NORTH CAROLINA

Catawba College.....Salisbury
Duke University, Trinity College.....Durham
Guilford College.....Guilford College
High Point College.....High Point

OHIO

Baldwin-Wallace College.....Berea
Capital University, College of Arts and Sciences.....Columbus 9
Denison University, A College of Liberal Arts and Sciences.....Granville
Heidelberg College.....Tiffin
Kent State University, College of Liberal Arts.....Kent
Marietta College.....Marietta
Miami University, College of Arts and Sciences.....Oxford
Otterbein College.....Westerville
Wittenberg College.....Springfield

OREGON

Reed College.....Portland 2
Willamette University, College of Liberal Arts.....Salem

PENNSYLVANIA

Albright College.....Reading
Elizabethtown College.....Elizabethtown
Franklin and Marshall College.....Lancaster
Gettysburg College.....Gettysburg
Juniata College.....Huntingdon
Lebanon Valley College.....Annville
Lycoming College.....Williamsport
Moravian College.....Bethlehem
Muhlenberg College.....Allentown
Thiel College.....Greenville

SOUTH CAROLINA

Furman University.....Greenville
Newberry College.....Newberry
Wofford College.....Spartanburg

TENNESSEE

Carson-Newman College.....Jefferson City
Chattanooga, University of, College of Liberal Arts.....Chattanooga 3
East Tennessee State College.....Johnson City
Lincoln Memorial University.....Harrogate
Tennessee Wesleyan College.....Athens
Tusculum College.....Greeneville

TEXAS

Baylor University, College of Arts and Sciences.....Waco
Southwestern University, College of Arts and Sciences.....Georgetown

VIRGINIA

Bridgewater College.....Bridgewater
Randolph-Macon College.....Ashland
Richmond, University of, Richmond College.....Richmond
William and Mary, College of.....Williamsburg

WEST VIRGINIA

Davis and Elkins College.....Elkins
West Virginia Wesleyan College.....Buckhannon

WISCONSIN

Beloit College.....Beloit

Enrollment 1959-1960

Registered for the Master of Forestry Degree, 1960

Beamer, Harold Lee (B.S., Duke University), Pulaski, Va.
Beck, Donald Edward (B.S., Duke University), Winston-Salem, N. C.
Benedict, David Glenn (B.S.F., West Virginia University), Pearisburg, Va.
Bodie, William Culbreath (B.S., Newberry College), Batesburg, S. C.
Boone, Richard Sidney (B.S.F., Louisana State University), Paris, Tenn.
Davis, Mark Lofland, II (B.S., Lehigh University), Ashmont, Mass.
Douglass, Ross Swarens (B.S.F., North Carolina State College), Clinton, N. C.
Dutrow, George Fewell (B.S., Duke University), Washington, D. C.
French, Thomas Bedford (B.S., Virginia Polytechnic Institute), Farmville, Va.
Fritz, George Philip (Centre College of Kentucky), Peoria, Ill.
Harrison, William Lee (Duke University), Shaker Heights, Ohio.
Judy, Clifford Page (B.S., West Virginia Wesleyan College), Clarksburg, W. Va.
Kayll, Albert James (B.S.F., University of British Columbia), Vancouver, B. C.
Keller, Walter McClellan (B.S.F., North Carolina State College), Raleigh, N. C.
Kochenderfer, James Nallen (B.S.F., West Virginia University), Hendricks, W. Va.
Kulow, Don Lee (B.S., Michigan State University), Reading, Mich.
McClure, Joe Phillip (B.S., Oklahoma A & M College), Asheville, N. C.
Meyer, Vernon Warren (B.S., Colorado State University), Bottineau, N. D.
Morgan, Richard Leroy, Jr. (B.S., Duke University), Arlington, Va.
Moyers, George Bruce (A.B., Lincoln Memorial University), Speedwell, Tenn.
Roberts, Bruce Roger (B.A., Gettysburg College), Leonia, N. J.
Rogers, Jack David (Davis-Elkins College), Pt. Pleasant, W. Va.
Schultz, A. Jay (B.S., Oklahoma A & M College), Wilburton, Okla.
Singer, S. Ronald (B. S., Rutgers University), Browns Mill, N. J.
Stone, Jake Massie (B.S., Virginia Polytechnic Institute), Amherst, Va.
Swisher, Kenneth John (Lebanon Valley College), Lebanon, Pa.
Thayer, Harry Adam (Marietta College), Williamston, W. Va.
Tinus, Richard Willard (B.A., Wesleyan University), Maplewood, N. J.
Torrey, William Ford, Jr. (B.S., Cornell University), Savannah, Ga.
Vaughn, Joseph Edward (B.S., West Virginia Wesleyan College), Berlin, Md.
Weaver, Ralph Steele, II (A.B., Gettysburg College), Catasauqua, Pa.
Will, Nelson Paige (A.B., Bridgewater College), Bridgewater, Va.

Registered for the Master of Forestry Degree, 1961

Allen, Richard Chapman (B.S., University of Maine), Charlotte, N. C.
Clayton, Joseph Edward (Duke University), Williamston, N. C.
Collins, Dannie Joe (Duke University), Baltimore, Md.
Czerepinski, Frank Peter (Davis-Elkins College), Jamesport, N. Y.
Drayton, Eddie Raynor, III (Wofford College), Bishopville, S. C.
Fish, Robert Bogart (Moravian College), Westwood, N. J.
George, Chandrathil Kurian (B.S., University of Karnatak), Kerala State, India.
Hudspeth, Harold Seaford (Davis-Elkins College), Kannapolis, N. C.
Klein, John Frederick (Duke University), Wyomissing, Pa.
McQuilkin, Robert Arthur (Muhlenberg College), Springfield, Pa.
Pruess, John Frederick (Gettysburg College), Ridgewood, N. J.
Quarles, Dwight Lynn (Carson-Newman College), Jefferson City, Tenn.
Towers, Barry (Thiel College), Pittsburgh, Pa.
Wellons, Jesse Davis, III (Duke University), Durham, N. C.

Registered for the Doctor of Forestry Degree

Baird, Charles O'Conner (B.S., University of Tennessee; M.F., Yale University), Sewanee, Tenn.

Chanphaka, Udhai (B.S.; M.S., University of the Philippines), Bangkok, Thailand.

Clutter, Jerome Lee (B.S., Michigan State University; M.F., Duke University), Asheville, N. C.

DeBrunner, Louis Earl (B.S., University of Cincinnati; M.F., Yale University), Cincinnati, Ohio.

Jackson, Desmond Sidney (B.A., M.A., Oxford University), Hawkes Bay, New Zealand.

McCormack, Maxwell Leland (B.S., University of Maine; M.F., Duke University), Cranford, N. J.

McGee, Charles Eugene (B.S., Howard College; M.F., Duke University), Birmingham, Ala.

Pharis, Richard Persons (B.S.F., University of Washington; M.F., Duke University), Lexington, Ky.

Thompson, William Payne (A.B., M.F., Yale University), Saticoy, Calif.

Vaidya, Madhu Sudan Lal (F.Sc. (medical), Bhargwa Municipal College; B.Sc., Punjab University; M.F., Duke University), Mandi Himachal, Pradesh, India.

Students in Summer Session Only, 1959

Chappelle, Daniel Eugene (B.S., Colorado State University), Cordele, Ga.

Osgood, William Henry (B.S., University of Massachusetts; M.F., Duke University), Leverett, Mass.

Schenck, Alexander F. (B.S., Davidson College; M.B.A., Harvard University), Charlotte, N. C.

Students of Forestry in the Graduate School of Arts and Sciences

Barrett, James Passmore (B.S.F., North Carolina State College; M.F., Duke University), Alexandria, Va.

Hutnik, Russell James (B.S.F., Pennsylvania State University; M.F., Yale University), Shickshinny, Pa.

Steensen, Donald H. J. (B.S.F., Iowa State College; M.F., Duke University), Clinton, Iowa.

Institutions Represented

Bhargwa Municipal College	1	North Carolina State College	3
Bridgewater College	1	Oklahoma A & M College	2
Carson-Newman College	1	Oxford University	1
Centre College of Kentucky	1	Pennsylvania State University	1
Colorado State University	2	Punjab University	1
Cornell University	1	Rutgers University	1
Davidson College	1	Thiel College	1
Davis-Elkins College	3	University of British Columbia	1
Duke University	17	University of Cincinnati	1
Gettysburg College	3	University of Karnatak	1
Harvard University	1	University of Maine	2
Howard College	1	University of Massachusetts	1
Iowa State College	1	University of the Philippines	1
Lebanon Valley College	1	University of Tennessee	1
Lehigh University	1	University of Washington	1
Lincoln Memorial University	1	Virginia Polytechnic Institute	2
Louisiana State University	1	Wesleyan University	1
Marietta College	1	West Virginia University	2
Michigan State University	2	West Virginia Wesleyan College	2
Moravian College	1	Wofford College	1
Muhlenberg College	1	Yale University	4
Newberry College	1	Total Institutions	43

Geographical Distribution

UNITED STATES

Alabama	1	Georgia	2
California	1	Illinois	1
District of Columbia	1	Iowa	1

Kentucky	1	Ohio	2
Maryland	2	Oklahoma	1
Massachusetts	2	Pennsylvania	6
Michigan	1	South Carolina	2
New Jersey	6	Tennessee	4
New York	1	Virginia	7
North Carolina	10	West Virginia	4
North Dakota	1	Total States	21

FOREIGN COUNTRIES

Canada	1	New Zealand	1
India	2	Thailand	1
		Total	4

General Summary

Students in the School of Forestry	56
Students in Summer Session Only	3
Students of Forestry in the Graduate School of Arts and Sciences	3
Total Enrollment	62
Total Number of Institutions Represented	43
Total Number of States Represented	21
Total Number of Foreign Countries Represented	4

BULLETINS PUBLISHED BY THE SCHOOL OF FORESTRY, DUKE UNIVERSITY*

1. *The Duke Forest: A Demonstration and Research Laboratory,* by Clarence F. Korstian and William Maughan. 1935. Price, $1.00.
2. *Fungi of the Duke Forest and Their Relation to Forest Pathology,* by Frederick A. Wolf in collaboration with K. H. Garren and J. K. Miller. 1938. Price, $1.50.
3. *Plant Competition in Forest Stands,* by Clarence F. Korstian and Theodore S. Coile. 1938. Price, $1.50.
4. *Root and Shoot Growth of Shortleaf and Loblolly Pines in Relation to Certain Environmental Conditions,* by John F. Reed. 1939. Price, 75 cents.
5. *Soil Changes Associated with Loblolly Pine Succession on Abandoned Agricultural Land of the Piedmont Plateau,* by Theodore S. Coile. 1940. Price $1.00.
6. *An Examination of Basic Principles of Comparative Forest Valuation,* by Roy B. Thomson. 1942. Price, $1.00.
7. *Sampling Methods in Forestry and Range Management,* by F. X. Schumacher and R. A. Chapman. 1942. Price: cloth, $4.50.
8. *Forestry on Private Lands in the United States,* by Clarence F. Korstian. 1944. Price: paper, $1.50; cloth, $2.50.
9. *The Effect of Basal Wounding by Forest Fires on the Diameter Growth of Some Southern Appalachian Hardwoods,* by George M. Jemison. 1944. Price, $1.00.
10. *Bark Beetles and Ambrosia Beetles* (Coleoptera: Scolytoidea): *With Special Reference to Species Occurring in North Carolina,* by James A. Beal and Calvin L. Massey. Price, $2.00.
11. *The Prediction of Growth in Uneven-aged Timber Stands on the Basis of Diameter Distributions,* by Jesse H. Buell. 1945. Price, $1.00.
12. *Forest Products Marketing Problems in the Piedmont Region of North Carolina,* by A. E. Wackerman. 1946. Price, $1.00.
13. *Relation of Soil Characteristics to Site Index of Loblolly and Shortleaf Pines in the Lower Piedmont Region of North Carolina,* by Theodore S. Coile. 1948. Out of print.
14. *Forest Insects of the Southeast With Special Reference to Species Occurring in the Piedmont Plateau of North Carolina,* by James A. Beal with the assistance of William Haliburton and F. B. Knight. 1951. Price, $2.50.
15. *Mineral Nutrition of Trees—A Symposium.* 1959. Price, $2.50.

* For sale by School of Forestry, Duke University, Durham, North Carolina, U. S. A.

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OF
DUKE UNIVERSITY

The Graduate School of Arts and Sciences

ANNOUNCEMENTS FOR 1960-61

VOLUME 32 January, 1960 NUMBER 3-A

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For Bulletin of Undergraduate Instruction, apply to *The Registrar,* Duke University, Durham, N. C.

For Bulletin of The College of Engineering, apply to *The Registrar,* Duke University, Durham, N. C.

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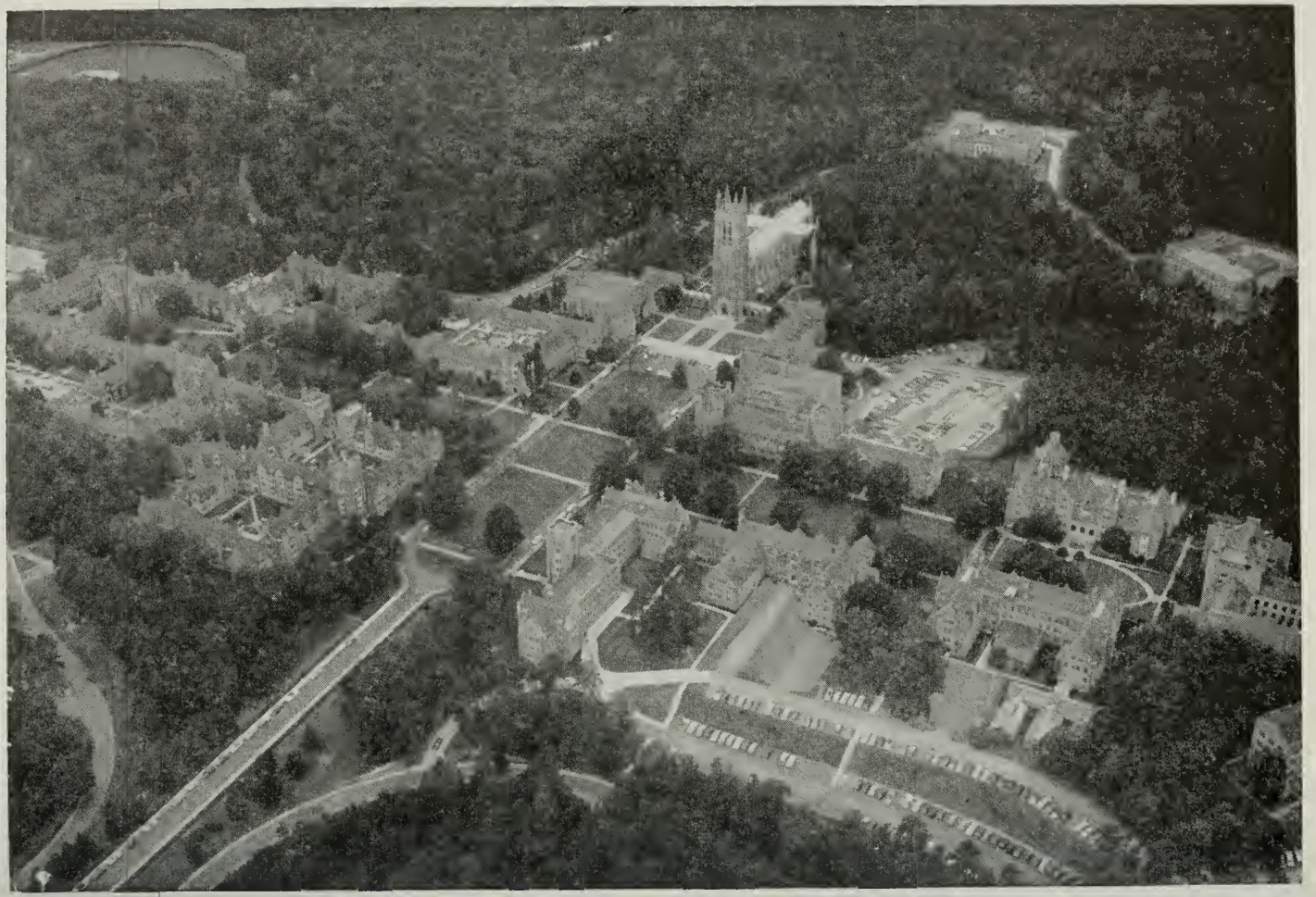
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BULLETIN
OF
DUKE UNIVERSITY

THE GRADUATE SCHOOL
OF ARTS AND SCIENCES

1959-1960
ANNOUNCEMENTS FOR 1960-1961

DURHAM, NORTH CAROLINA
1960



DUKE UNIVERSITY: WEST CAMPUS WITH DUKE FOREST IN BACKGROUND.

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Calendar of the Graduate School

Summer Session 1960

1960

May	3-4	Advance registration for current students for 1960 Summer Session (and for fall semester 1960)
June	10	Friday—Registration of students for Summer Session, first term.
June	11	Saturday—Instruction begins for Summer Session, first term.
June	23	Thursday—Final date for filing with the Graduate Office Statement of Intention to complete, during the first term, requirements for the Master's degree. If a thesis is to be presented, the title is to be filed at the same time as the Statement of Intention.
July	5-8	German examinations for candidates for graduate degrees. Candidates register in the Graduate School Office for these examinations not later than June 23.
July	6	Wednesday—French examinations for candidates for graduate degrees, 4:00 P.M., 233 Allen Building. Candidates register in the Graduate School Office not later than June 29.
July	15	Friday—First term of Summer Session ends.
July	16	Saturday—Registration of students for second term of Summer Session.
July	18	Monday—Instruction begins for second term of Summer Session.
July	28	Thursday—Final date for filing with the Graduate Office Statement of Intention to complete, during the second term, requirements for the Master's degree. If a thesis is to be presented, the title is to be filed at the same time as the Statement of Intention.
Aug.	20	Saturday—Second term of Summer Session ends.

Academic Year 1960-1961

Sept.	19	Monday—Reading, Vocabulary and Grammar Tests in French and German. French, 9:00 A.M., German, 10:15 A.M., both in 125 Engineering Building. (See page 21 for information.) Monday—English Tests for Foreign Students. 2:00 P.M., 125 Engineering Building.
Sept.	21	Wednesday—Registration of graduate students for first semester. Indoor Stadium.
Sept.	22	Thursday—Classes begin.
Oct.	17-21	German examinations for candidates for graduate degrees. Candidates register in the Graduate School Office for these examinations not later than October 5.
Nov.	23	Wednesday, 12:30 P.M.—Thanksgiving recess begins.
Nov.	28	Monday, 8:00 A.M.—Classes are resumed.
Dec.	11	Sunday—Founders Day.
Dec.	17	Saturday, 12:30 P.M.—Christmas recess begins.

1961

Jan.	3	Tuesday, 8:00 A.M.—Classes are resumed.
Jan.	6	Friday—French examination for candidates for graduate degrees, 4:00 P.M., place to be announced. Candidates register in the Graduate School Office for these examinations not later than December 16, 1960.
Jan.	10-16	Reading period.
Jan.	17	Tuesday—Final examinations begin.
Jan.	27	Friday—Final examinations end.
Jan.	31	Tuesday—Reading, Vocabulary and Grammar Tests in French and German for entering students, second semester. French, 10:30 A.M., German, 11:45 A.M., both in 125 Engineering Building. (See page 21 for information.)
Feb.	1	Wednesday—Registration for students not in residence during first semester and for current students who failed to pre-register. Indoor Stadium.
Feb.	2	Thursday—Classes are resumed.
March	1	Wednesday—Last day for applying for University fellowships, graduate assistantships, and graduate scholarships. Final date for filing with Graduate Office Statement of Intention of receiving advanced degree in June. Titles of theses and dissertations are to be filed concurrently with the Statement of Intention.
March	25	Saturday, 12:30 P.M.—Spring recess begins.
April	4	Tuesday, 8:00 A.M.—Classes are resumed.
April	14	Friday—French examinations for candidates for graduate degrees, 4:00 P.M., place to be announced. Candidates register in the Graduate School Office for these examinations not later than March 31.
April	14	Friday—Last day for submitting theses for degrees of Doctor of Philosophy and Doctor of Education.
May	1	Monday—Last day for submitting theses for degrees of Master of Arts, Master of Science, Master of Education, and Master of Arts in Teaching.
May	1-6	German examinations for candidates for graduate degrees. Candidates register in the Graduate School Office for these examinations not later than April 19.
May	8-13	Reading period.
May	20	Saturday—Final examinations begin.
May	31	Wednesday—Final examinations end.
June	3	Saturday—Commencement begins.
June	4	Sunday—Commencement sermon.
June	5	Monday—Graduating Exercises.

LAST DATES FOR APPLYING FOR ADMISSION

Fall Semester, with Award	February 15
Fall Semester, Admission Only	August 1
Spring Semester	January 1
Summer Session, First Term	May 12
Summer Session, Second Term	June 16

1960

JULY

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Officers of the University Administration



Arthur Hollis Edens, Ph.D., LL.D. *President of the University*	2138 Myrtle Drive
Paul Magnus Gross, Ph.D. *Vice-President in the Division of Education*	3816 Dover Road, Hope Valley
Charles Edward Jordan, A.B., LL.D. *Vice-President in the Division of Public Relations*	615 West Campus Drive
Herbert James Herring, A.M., LL.D. *Vice-President in the Division of Student Life*	2010 Myrtle Drive
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Alfred Smith Brower, A.B. *Treasurer*	614 West Campus Drive
Gerhard Chester Henricksen, CPA *Business Manager and Comptroller*	216 Forest Wood Drive
John Marion Dozier, A.B. *Secretary of the University*	2510 Wrightwood Avenue

Graduate School Administration

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Francis Ezra Bowman, Ph.D. *Secretary of the Graduate Faculty* *Assistant Dean and Director of Admissions,* *Graduate School of Arts and Sciences*	2114 Woodrow Street
Benjamin Edward Powell, Ph.D. *Librarian*	3609 Hathaway Road, Hope Valley
Richard Lovejoy Tuthill, Ed.D. *University Registrar*	2709 Dogwood Road

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Dean of the Graduate School of Arts and Sciences, ex officio

Francis Ezra Bowman, Ph.D.
Secretary of the Graduate Faculty, ex officio

Frank T. deVyver, Ph.D.

Clarence Gohdes, Ph.D.

Gregory A. Kimble, Ph.D.

Paul J. Kramer, Ph.D.

Harold T. Parker, Ph.D.

Richard L. Predmore, D.M.L.

Instructional Staff

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(as of November 20, 1959)

The date denotes the first year of service at Duke University.

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Donald Keith Adams, (1931) Ph.D., *Professor of Psychology*
John Richard Alden, (1955) Ph.D., *Professor of History*
Hugh Anderson, (1957) Ph.D., *Associate Professor of Biblical Theology*
†Lewis Edward Anderson, (1936) Ph.D., *Professor of Botany*
Roger Fabian Anderson, (1950) Ph.D., *Professor of Forest Entomology*
H. G. Andrewartha, (1959) D.Sc., *Visiting Professor of Zoology*
John Leslie Artley, (1955) D. Eng., *Associate Professor of Electrical Engineering*
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Joseph Randle Bailey, (1946) Ph.D., *Associate Professor of Zoology*
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Paull Franklin Baum, (1922) Ph.D., *James B. Duke Professor Emeritus of English*
Charles A. Baylis, (1952) Ph.D., *Professor of Philosophy*
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Roland Frederick Becker, (1951) Ph.D., *Associate Professor of Anatomy*
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Mrs. Mary L. C. Bernheim, (1930) Ph.D., *Associate Professor of Biochemistry*
Merle M. Bevington, (1942) Ph.D., *Professor of English*
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William Dwight Billings, (1952) Ph.D., *Professor of Botany*
Martin Lee Black, Jr., (1930) M.B.A., C.P.A., *Professor of Accounting*
Martin M. Block, (1952) Ph.D., *Associate Professor of Physics*
Hugo Leander Blomquist, (1920) Ph.D., *Professor Emeritus of Botany*
Edward Claude Bolmeier, (1948) Ph.D., *Professor of Education*
Charles Alan Boneau, (1957) Ph.D., *Assistant Professor of Psychology*
Cazlyn Green Bookhout, (1935) Ph.D., *Professor of Zoology*
‡Lloyd J. Borstelmann, (1953) Ph.D., *Assistant Professor of Psychology*
Francis Ezra Bowman, (1945) Ph.D., *Associate Professor of English*
Benjamin Boyce, (1950) Ph.D., *Professor of English*
Thomas Allen Boyle, Jr., (1957) M.S. in M.E., *Associate Professor of Mechanical Engineering*
†Charles Kilgo Bradsher, (1939) Ph.D., *Professor of Chemistry*
Ralph Braibanti, (1953) Ph.D., *Professor of Political Science*
Jack Brehm, (1958) Ph.D., *Assistant Professor of Psychology*

*Absent on sabbatical leave, fall semester. 1959-60.
†Absent on sabbatical leave, 1959-60
‡Absent on leave, 1959-60

Roberta Florence Brinkley, (1947) Ph.D., LL.D., *Professor of English*
Frances Campbell Brown, (1931) Ph.D., *Professor of Chemistry*
*William H. Brownlee, (1948) Th.M., Ph.D., *Associate Professor of Old Testament*
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Leonard Carlitz, (1932) Ph.D., *Professor of Mathematics*
John Winder Carr, Jr., (1926) Ph.D., *Professor of Education*
‡Eber Malcolm Carroll, (1923) Ph.D., *James B. Duke Professor of History*
Allan Murray Cartter, (1952) Ph.D., *Professor of Economics*
William H. Cartwright, (1951) Ph.D., *Professor of Education*
Juan R. Castellano, (1947) D.F.L., *Professor of Romance Languages*
Clifton C. Cherpack, (1958) Ph.D., *Associate Professor of Romance Languages*
Benjamin Guy Childs, (1924) M.A., *Professor Emeritus of Education*
Kenneth Willis Clark, (1931) Ph.D., *Professor of New Testament*
§Romane Lewis Clark, (1953) Ph.D., *Associate Professor of Philosophy*
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Louis David Cohen, (1946) Ph.D., *Professor of Psychology*
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Joel G. Colton, (1947) Ph.D., *Associate Professor of History*
¶Robert Merle Colver, (1953) Ed.D., *Associate Professor of Education*
Norman Francis Conant, (1935) Ph.D., *Professor of Mycology; Associate Professor of Bacteriology*
**Robert Howe Connery, (1949) Ph.D., *Professor of Political Science*
¶Thomas Howard Cordle, (1950) Ph.D., *Associate Professor of Romance Languages*
Frederick A. G. Cowper, (1918) Ph.D., *Professor Emeritus of Romance Languages*
William L. Culberson, (1955) Ph.D., *Assistant Professor of Botany*
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Robert Earle Cushman, (1945) B.D., Ph.D., *Professor of Systematic Theology*
Bingham Dai, (1943) Ph.D., *Professor of Psychology*
Paul G. Daston, (1958) Ph.D., *Assistant Professor of Psychology*
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Francis George Dressel, (1929) Ph.D., *Professor of Mathematics*
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Marion M. Duncan, (1956) Ph.D., *Visiting Assistant Professor of Physics*
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William Whitfield Elliott, (1925) Ph.D., *Professor of Mathematics*
Ernest Elsevier, (1950) M.S. in M.E., *Associate Professor of Mechanical Engineering*

*Resigned, August 31, 1959
†Resigned June 30, 1959
‡Retired, August 31, 1959
§Absent on sabbatical leave, 1959-60
¶Absent on sabbatical leave, fall semester, 1959-60
**Absent on leave, 1959-60
††Absent on sabbatical leave, spring semester, 1959-60

John Wendell Everett, (1932) Ph.D., *Professor of Anatomy*
*William Martin Fairbank, (1952) Ph.D., *Associate Professor of Physics*
Amerigo Farina, (1958) Ph.D., *Assistant Professor of Psychology*
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*Andrew Durwood Foster, (1954) B.D., *Associate Professor of the History and Philosophy of Religion*
Thomas M. Gallie, Jr., (1954-55; 1956) Ph.D., *Assistant Professor of Mathematics*
William Henry Gardner, Jr., (1953) M.Eng., *Associate Professor of Civil Engineering*
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W. Scott Gehman, Jr., (1954) Ph.D., *Associate Professor of Psychology in Education*
John Jay Gergen, (1936) Ph.D., *Professor of Mathematics*
Allan H. Gilbert, (1920) Ph.D., *Professor Emeritus of English*
George Glockler, (1952) Ph.D., *Visiting Lecturer in Chemistry*
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Walter Gordy, (1946) Ph.D., LL.D., D.H.C., *Professor of Physics*
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Irving Emery Gray, (1930) Ph.D., *Professor of Zoology*
John R. Gregg, (1957) Ph.D., *Professor of Zoology*
Eugene Greuling, (1948) Ph.D., *Associate Professor of Physics*
Paul Magnus Gross, (1919) Ph.D., *William Howell Pegram Professor of Chemistry*
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Frank Gregory Hall, (1926-42; 1945) Ph.D., *Professor of Physiology and Pharmacology*
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‡John Hamilton Hallowell, (1942) Ph.D., *Professor of Political Science*
William Baskerville Hamilton, (1936) Ph.D., *Professor of History*
Philip Handler, (1939) Ph.D., *Professor of Biochemistry and Nutrition*
Frank Allan Hanna, (1948) Ph.D., *Professor of Economics*
George Thomas Hargitt, (1930) Ph.D., Sc.D., *Professor Emeritus of Zoology*
§Ellwood Scott Harrar, (1936) Ph.D., *Professor of Wood Technology*
Hornell Norris Hart, (1938) Ph.D., *Professor Emeritus of Sociology*
Charles Cleveland Hatley, (1917) Ph.D., *Professor Emeritus of Physics*
Charles Roy Hauser, (1929) Ph.D., *Professor of Chemistry*
Simeon K. Heninger, (1955) Ph.D., *Assistant Professor of English*
Stuart C. Henry, (1959) Ph.D., *Associate Professor of American Christianity*
Duncan Charteris Hetherington, (1930) Ph.D., M.D., *Professor of Anatomy*
Douglas Greenwood Hill, (1931) Ph.D., *Professor of Chemistry*
Hans J. Hillerbrand, (1959) Ph.D., *Assistant Professor of Modern European Christianity*
Marcus Edwin Hobbs, (1935) Ph.D., *Professor of Chemistry*
Irving B. Holley, Jr., (1947) Ph.D., *Associate Professor of History*
Calvin Bryce Hoover, (1925) Ph.D., Litt.D., *James B. Duke Professor of Economics*

*Resigned, August 31, 1959
†Absent on sabbatical leave, 1959-60
‡Absent on sabbatical leave, spring semester, 1959-60
§Absent on sabbatical leave, fall semester, 1959-60

Edward Charles Horn, (1946) Ph.D., *Professor of Zoology*
Jay Broadus Hubbell, (1927) Ph.D., Litt.D., *Professor Emeritus of English*
Wayland Elroy Hull, (1953) Ph.D., *Assistant Professor of Physiology*
*Harold J. Humm, (1954) Ph.D., *Associate Professor of Botany*
*Don Dougan Humphrey, (1945) Ph.D., *Professor of Economics*
Mrs. Wanda Sanborn Hunter, (1947) Ph.D., *Associate Professor of Zoology*
Allan S. Hurlburt, (1956) Ph.D., *Professor of Education*
William H. Irving, (1936) B.A., (Oxon.), Ph.D., *Professor Emeritus of English*
†Howard Eikenberry Jensen, (1931) B.D., Ph.D., *Professor of Sociology*
Bronislas de Leval Jezierski, (1958) Ph.D., *Assistant Professor of Russian Language and Literature*
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‡Edward Ellsworth Jones, (1953) Ph.D., *Associate Professor of Psychology*
§Brady Rimbey Jordan, (1927) Ph.D., *Professor of Romance Languages*
Henry Kamin, (1948) Ph.D., *Assistant Professor of Biochemistry*
Van Leslie Kenyon, Jr., (1945) M.M.E., *Professor of Mechanical Engineering*
Alan C. Kerckhoff, (1958) Ph.D., *Associate Professor of Sociology*
Gregory Adams Kimble, (1952) Ph.D., *Professor of Psychology*
Peter H. Klopfer, (1958) Ph.D., *Assistant Professor of Zoology*
¶William H. Knisely, (1956) Ph.D., *Associate Professor of Anatomy*
Sigmund Koch, (1942-47; 1948) Ph.D., *Professor of Psychology*
Clarence Ferdinand Korstian, (1930) Ph.D., *Professor Emeritus of Silviculture*
Jack L. Kostyo (1959) Ph.D., *Assistant Professor of Physiology*
Paul Jackson Kramer, (1931) Ph.D., *James B. Duke Professor of Botany*
‡William R. Krigbaum, (1952) Ph.D., *Associate Professor of Chemistry*
Charles Albert Krummel, (1922) Ph.D., *Professor Emeritus of German*
*George Frederic Kuder, (1948) Ph.D., *Professor of Psychology*
Weston LaBarre, (1946) Ph.D., *Professor of Anthropology*
‡Creighton Lacy, (1953) B.D., Ph.D., *Associate Professor of Missions and Social Ethics*
Martin Lakin (1958) Ph.D., *Assistant Professor of Psychology*
Charles Earl Landon, (1926) Ph.D., *Professor of Economics*
John Tate Lanning, (1927) Ph.D., *Professor of History*
William Thomas Laprade, (1909) Ph.D., *Professor Emeritus of History*
John E. Larsh, Jr., (1943) Sc.D., *Associate Professor of Parasitology*
Harold Walter Lewis, (1949) Ph.D., *Professor of Physics*
Daniel A. Livingstone, (1956) Ph.D., *Associate Professor of Zoology*
E. Croft Long (1956) M.D., *Assistant Professor of Physiology and Pharmacology*
John C. McKinney, (1957) Ph.D., *Professor of Sociology*
§Jonathon Collins McLendon, (1952) Ph.D., *Associate Professor of Education*
Robert McLeod (1955) Ph.D., *Assistant Professor of Mathematics*
John Nelson Macduff, (1956) M.M.E., *Professor of Mechanical Engineering*
Alan Krebs Manchester, (1929) Ph.D., *Professor of History*
Clyde L. Manschreck, (1954) B.D., Ph.D., *Associate Professor of Undergraduate Religion*
Joseph Eldridge Markee, (1943) Ph.D., *James B. Duke Professor of Anatomy*

*Absent on leave, 1959-60
†Retired, August 31, 1959
‡Absent on sabbatical leave, 1959-60
§Absent on sabbatical leave, fall semester, 1959-60
¶Resigned, July 31, 1959

Sidney David Markman, (1947) Ph.D., *Associate Professor of Art History and Archaeology*
Otto Meier, Jr., (1934) Ph.D., *Professor of Electrical Engineering*
Johannes Horst Max Meyer, (1959) D.Sc., *Assistant Professor of Physics*
Montrose J. Moses, (1959) Ph.D., *Associate Professor of Anatomy*
Aubrey Willard Naylor, (1952) Ph.D., *Professor of Botany*
*Glenn Robert Negley, (1946) Ph.D., *Professor of Philosophy*
Ernest William Nelson, (1926) Ph.D., *Associate Professor of History*
Henry Winston Newson, (1948) Ph.D., *Professor of Physics*
Walter McKinley Nielsen, (1925) Ph.D., *James B. Duke Professor of Physics*
Walter D. Obrist, (1956) Ph.D., *Assistant Professor of Psychology*
Henry John Oosting, (1932) Ph.D., *Professor of Botany*
John R. Overman, (1955) M.D., *Associate Professor of Bacteriology*
Harry Ashton Owen, Jr., (1951) M.S.E., *Associate Professor of Electrical Engineering*
Harold Talbot Parker, (1939) Ph.D., *Professor of History*
†Oscar A. Parsons, (1954) Ph.D., *Associate Professor of Psychology*
Percy Herbert Partridge, (1959) M.A., *Visiting Professor of Political Science*
Ransom Rathbone Patrick, (1954) M.F.A., *Professor of Aesthetics and Art*
Robert Leet Patterson, (1945) B.D., Ph.D., *Professor Emeritus of Philosophy*
William Bernard Peach, (1951) Ph.D., *Assistant Professor of Philosophy*
Talmadge Lee Peele, (1939) M.D., *Associate Professor of Anatomy*
‡Kenneth E. Penrod, (1950) Ph.D., *Professor of Physiology and Pharmacology*
Harold Sanford Perry, (1932) Ph.D., *Associate Professor of Botany*
Ray C. Petry, (1937) Ph.D., LL.D., *Professor of Church History*
Olan Lee Petty, (1952) Ph.D., *Associate Professor of Education*
Jane Philpott, (1951) Ph.D., *Associate Professor of Botany*
Leo Pine, (1957) Ph.D., *Assistant Professor of Microbiology*
Jacques C. Poirier, (1955) Ph.D., *Assistant Professor of Chemistry*
Benjamin Edward Powell, (1946) Ph.D., *Librarian*
Richard Lionel Predmore, (1950) D.M.L., *Professor of Romance Languages*
Jack J. Preiss (1959) Ph.D., *Associate Professor of Sociology*
James Ligon Price, Jr., (1952) Ph.D., *Associate Professor of Undergraduate Religion*
Louis DuBose Quin (1956) Ph.D., *Assistant Professor of Chemistry*
Charles William Ralston, (1953) Ph.D., *Associate Professor of Forest Soils*
Robert Stanley Rankin, (1927) Ph.D., *Professor of Political Science*
William Walter Rankin, Jr., (1926) M.A., *Professor Emeritus of Mathematics*
Guy H. Ransom, (1959) Ph.D., *Visiting Associate Professor of Christian and Social Ethics*
Benjamin Ulysses Ratchford, (1928) Ph.D., *Professor of Economics*
Thomas D. Reynolds, (1953) Ph.D., *Assistant Professor of Mathematics*
Henry Stoutte Roberts, Jr., (1948) Ph.D., *Associate Professor of Zoology*
John Henderson Roberts, (1931) Ph.D., *Professor of Mathematics*
Hermann R. Robl, (1959) Dr. habil., *Visiting Assistant Professor of Physics*
Eliot H. Rodnick, (1949) Ph.D., *Professor of Psychology*
Robert Samuel Rogers, (1937) Ph.D., F.A.A.R., *Professor of Latin*
Theodore Ropp, (1938) Ph.D., *Associate Professor of History*
Robert S. Rowe, (1956) D.Eng., *J. A. Jones Professor of Civil Engineering*

*Absent on sabbatical leave, spring semester, 1959-60
†Resigned, August 31, 1959
‡Resigned, June 30, 1959

Donald Francis Roy, (1950) Ph.D., *Associate Professor of Sociology*
Mabel F. Rudisill, (1948) Ph.D., *Associate Professor of Education*
Ralph Wayne Rundles, (1945) Ph.D., M.D., *Professor of Medicine*
Herman Salinger, (1955) Ph.D., *Professor of German*
Muriel I. Sandeen, (1950) Ph.D., *Assistant Professor of Zoology*
Charles Richard Sanders, (1937) Ph.D., *Professor of English*
John Henry Saylor, (1928) Ph.D., *Professor of Chemistry*
*Theodor Schmidt, (1958) Ph.D., *Visiting Assistant Professor of Mathematics*
Mrs. Bodil Schmidt-Nielsen, (1956) D.D.S., Dr.Odont., Dr.Phil., *Associate Research Professor of Zoology*
†Knut Schmidt-Nielsen, (1952) Mag.Sc., Dr.Phil., *Professor of Zoology*
George C. Schoolfield, (1959) Ph.D., *Associate Professor of German*
Francis Xavier Schumacher, (1937) B.S., *Professor of Forestry*
‡George William Schwert, (1946) Ph.D., *Professor of Biochemistry*
§Lambert Armour Shears, (1927) Ph.D., *Professor of German*
Joseph R. Shoenfield, (1952) Ph.D., *Assistant Professor of Mathematics*
Edward Christian Simmons, (1947) Ph.D., *Professor of Economics*
Allan P. Sindler, (1959) Ph.D., *Associate Professor of Political Science*
David Tillerson Smith, (1930) M.D., Litt.D., *James B. Duke Professor of Bacteriology*
Grover C. Smith, (1952) Ph.D., *Assistant Professor of English*
Hilrie Shelton Smith, (1931) Ph.D., D.D., Litt.D., *James B. Duke Professor of American Religious Thought*
Joel Smith, (1958) Ph.D., *Associate Professor of Sociology*
Peter Smith, (1959) Ph.D., *Assistant Professor of Chemistry*
¶Robert Sidney Smith, (1932) Ph.D., *Professor of Economics*
Hersey Everett Spence, (1918) B.D., D.D., Litt.D., *Professor Emeritus of Religious Education*
Joseph John Spengler, (1934) Ph.D., *James B. Duke Professor of Economics*
Charles D. Spielberger, (1955) Ph.D., *Assistant Professor of Psychology*
Hertha D. E. Sponer, (1935) Ph.D., *Professor of Physics*
Harold P. Stephenson, (1957) Ph.D., *Associate Professor of Mechanical Engineering*
Lionel Stevenson, (1955) B.Litt. (Oxon.) Ph.D., F.R.S.L., *James B. Duke Professor of English*
William Franklin Stinespring, (1936) Ph.D., *Professor of Old Testament*
**Hans H. Strupp, (1958) Ph.D., *Visiting Lecturer in Psychology*
Howard Austin Strobel, (1948) Ph.D., *Associate Professor of Chemistry*
*Hans H. Strupp, (1958) Ph.D., *Visiting Lecturer in Psychology*
Wippert Arnot Stumpf, (1948) Ph.D., *Associate Professor of Education*
John Dennis Sullivan, (1959) Ph.D., *Assistant Professor of Wood Technology*
Elizabeth Read Sunderland, (1939-42; 1943) Ph.D., *Associate Professor of Art*
‡Wolfgang Taraba, (1956) Ph.D., *Assistant Professor of German*
Haywood Maurice Taylor, (1930) Ph.D., *Associate Professor of Biochemistry*
††Joseph Miller Thomas, (1930) Ph.D., *Professor of Mathematics*
Edgar Tristram Thompson, (1935) Ph.D., *Professor of Sociology*
James Nardin Truesdale, (1930) Ph.D., *Professor of Greek*

*Resigned, January 31, 1959
†Absent on sabbatical leave, 1959-60
‡Resigned, August 31, 1959
§Retired, August 31, 1959
¶Absent on leave, 1959-60
**Resigned, May 31, 1959
††Absent on sabbatical leave, spring semester, 1959-60

*Arlin Turner, (1953) Ph.D., *Professor of English*
Charles Rowe Vail, (1939) Ph.D., *Professor of Electrical Engineering*
F. John Vernberg, (1951) Ph.D., *Assistant Professor of Zoology*
Patrick R. Vincent, (1954) Ph.D., *Assistant Professor of Romance Languages*
Clement Vollmer, (1926) Ph.D., *Professor Emeritus of German*
Herbert von Beckerath, (1935) Ph.D., *Professor Emeritus of Economics and Political Science*
†Warren Chase Vosburgh, (1928) Ph.D., *Professor of Chemistry*
Loring Baker Walton, (1929) Lic. és L., Ph.D., *Professor of Romance Languages*
Calvin L. Ward, (1952) Ph.D., *Assistant Professor of Zoology*
Charles Eugene Ward, (1927) Ph.D., *Professor of English*
‡Seth L. Warner, (1955) Ph.D., *Assistant Professor of Mathematics*
Richard Lyness Watson, Jr., (1939) Ph.D., *Associate Professor of History*
Vernon Elgin Way, (1930) A.M., M.A., *Associate Professor of Greek*
Wilfred Dunbar Webb, (1959) Ph.D., *Visiting Asssociate Professor of Political Science*
Henry Weitz, (1950) Ed.D., *Associate Professor of Education*
Paul Welsh, (1948) Ph.D., *Associate Professor of Philosophy*
Robert W. Wheat, (1956) Ph.D., *Associate Professor of Biochemistry*
Alban Gregory Widgery, (1930) M.A., *Professor Emeritus of Philosophy*
Karl Milton Wilbur, (1946) Ph.D., *Professor of Zoology*
Robert L. Wilbur, (1957) Ph.D., *Assistant Professor of Botany*
Pelham Wilder, Jr., (1949) Ph.D., *Associate Professor of Chemistry*
Mrs. Hilda Pope Willett, (1948) Ph.D., *Associate Professor of Bacteriology*
James W. Williams, (1937) M.S., *Professor of Civil Engineering*
§Robert Marshall Williamson, (1951) Ph.D., *Assistant Professor of Physics*
Neil L. Wilson, (1957), Ph.D., *Assistant Professor of Philosophy*
Robert Renbert Wilson, (1925) Ph.D., LL.D., *Professor of Political Science*
Thomas George Wilson, (1959) D.Sc., *Associate Professor of Electrical Engineering*
Frederick Adolphus Wolf, (1927) Ph.D., *James B. Duke Professor Emeritus of Botany*
Frank Wilson Woods, (1958), Ph.D., *Assistant Professor of Silviculture*
Robert Hilliard Woody, (1929) Ph.D., *Professor of History*
William P. Yohe, (1958) Ph.D., *Assistant Professor of Economics*
James G. Yoho, (1957) Ph.D., *Associate Professor of Forest Economics*
Karl Edward Zener, (1928) Ph.D., *Professor of Psychology*

*Absent on sabbatical leave, spring semester, 1959-60
†Retired, August 31, 1959
‡Absent on leave, 1959-60
§Absent on sabbatical leave, 1959-60

General Regulations Governing Graduate Study

Admission

PREREQUISITES. A student seeking admission to the Graduate School of Arts and Sciences of Duke University must have received an A.B. or B.S. degree (or the equivalent in the case of foreign students) from an accredited institution. His undergraduate program should be well rounded and of such quality as to give positive evidence of capacity for graduate study. Normally he should have majored in the area of his intended graduate study. Many departments (see Courses of Instruction, pp. 51 ff.) list specific prerequisites. Students are urged to anticipate at least one of the language requirements (see pp. 21-23).

STUDENTS REQUIRING ADMISSION. Admission is required of 1) all students who intend to pursue study toward a degree offered by the Graduate School, 2) all other students who desire credit for whatever purpose for graduate courses—except students who register only in the Summer Session.

PROCEDURE FOR ALL APPLICANTS. A student seeking admission to the Graduate School should request the Dean of the Graduate School to send an application blank. This he should fill out completely and return promptly. In addition he should provide the following supporting documents: (1) a transcript or transcripts of all his undergraduate and graduate work mailed directly by the registrar to the Dean; (2) as soon as possible, supplementary transcripts showing completion of work not completed when the earlier transcript was made; (3) three letters of recommendation written by persons best qualified to judge him as a prospective graduate student and mailed directly to the Dean; (4) scores on the aptitude and major subject Graduate Record Examinations, always acceptable to strengthen the application and always to be reported if the examinations have been taken, desired but not required by the Departments of Biochemistry, Economics, Psychology, and Sociology, and required by the Department of Philosophy. (Information on times and places of Graduate Record Examinations can be provided

at the appplicant's college or by the Educational Testing Service, 20 Nassau Street, Princeton, New Jersey.)

ADDITIONAL PROCEDURE FOR FOREIGN STUDENTS. Fully qualified students from outside the United States are welcomed in the Graduate School to take courses and in many instances to study toward a degree. In applying for admission the foreign student should, in addition to the information required of all students, submit with his application (1) if his native language is not English, a statement by a qualified official that the applicant can read, write, speak, and understand English well enough to pursue a program of graduate study, (2) a statement certified by a responsible person that his finances are sufficient to maintain him during his stay at Duke University, and (3) a statement by a qualified medical doctor describing any emotional or physical illness the applicant has had during the previous five years.

All foreign students whose native language is not English will be examined during their first registration period for competence in the use of oral and written English. Until competence is determined, admission and arrangements for an award involving teaching must remain provisional. Such students as are found to lack the necessary competence will be required to enroll in the three-unit non-credit course English for Foreign Students and to reduce their course or research program three units if necessary.

CLOSING DATES FOR APPLICATIONS. Because applications cannot be reviewed until all required supporting documents are filed, applications should be submitted at least *two weeks* before the closing dates listed below:

Fall semester, admission and award.....	February 15
Fall semester, admission only.....	August 1
Spring semester, admission only.....	January 1
Summer Session,* First Term.....	May 10
Summer Session,* Second Term.....	June 16

NOTIFICATION AND STATUS. When the application is approved, the student will receive a letter of admission and an acceptance form. The process of admission is not complete until the statement of acceptance has been returned.

Applicants who are admitted will be offered full admission, provisional admission, or non-degree admission. *Provisional admission* is offered to students who (1) appear to warrant admission but who

* Students seeking admission to the Graduate School for study in the Summer Session should make application to the Dean of the Graduate School as well as to the Director of the Summer Session. It is the applicant's responsibility to make certain that his application is complete and in order before the dates specified.

do not fully comply with admission requirements, for a trial period of one semester or a minimum of 12 hours of course work, or (2) are admissible except that the application lacks a letter of recommendation, a supplementary transcript, or required test scores, or some other required information. *Non-degree admission* is offered to students who (1) have no intention of taking an advanced degree at Duke University but wish to take courses for accreditation, for transfer to other institutions, or for other purposes, (2) do not fully meet admission requirements but wish to further their academic interests, and (3) who apply late and must register before the application can be fully considered. Graduate credit earned under *provisional status* may be applied toward an advanced degree at Duke University if and when upon review the student is granted full admission; graduate credit earned under *non-degree status* may not be applied toward an advanced degree at Duke University. Late applicants ((3) above) will be granted full admission if admission can be completed within two weeks of registration.

Registration

WHO MUST REGISTER. (1) All students who enter course work or residence for credit; (2) all students who have completed minimum requirements for an advanced degree, but continue to use the facilities of the University in their research; (3) all students in *in absentia* status; (4) all students who wish merely to audit a course or courses.

REGISTRATION. After the applicant has received notification of his admission to the Graduate School and has returned his statement of acceptance of admission, he may present himself for registration. During the registration periods, announced in the *Bulletin,* he first confers with the Director of Graduate Studies of his major department, who prepares a course card, listing the course work to be taken during the semester. The student then presents this course card to registration officials, who enroll him officially in his courses. (For procedure for graduate students of the Consolidated University of North Carolina who wish to enroll in graduate courses at Duke University, see below p. 19.)

LATE REGISTRATION. All students are expected to register at the time stated in the *Bulletin. Those registering late are subject to a late registration fee of five dollars.*

CHANGE OF REGISTRATION. During the academic year within a period of fourteen days from the specified day of registration, students may change their schedules with the approval of the Director of Graduate Studies.

Grades, Hours, and Credits

Although ideally graduate study is principally individual reading, research, and laboratory experimentation under guidance, academic progress in the United States is generally measured and recorded in terms of course hours and credits. Peculiar to graduate study is the term *residence,* also generally measured in hours, to designate individual study apart from courses, such as writing a thesis and preparing for general examinations. Since September 1959 in this Graduate School credit for courses and seminars, research, and residence, and corresponding tuition and fees have been stated in terms of UNITS. According to conventional measurement ONE UNIT is equivalent to ONE SEMESTER HOUR. Thus a course previously described as carrying a credit of 3 s.h. now carries a credit of 3 units.

CREDITS EARNED OUTSIDE THIS GRADUATE SCHOOL.

(1) *Graduate Credit Earned before the A.B. Degree Is Granted.* Ordinarily no credit will be allowed for graduate courses earned before a student has been awarded his A.B. or B.S. degree. However, an undergraduate student at Duke University who, at the beginning of his final semester, lacks no more than 9 semester hours of fulfilling the requirements for the A.B. or B.S. degree, may obtain permission from the Dean of the Graduate School to enroll for graduate courses sufficient to bring his total program to fifteen hours a week. Such graduate courses will be credited toward the A.M., M.S., M.Ed., or M.A.T. degree, provided that the student meets the requirements for admission to the Graduate School, and that he is duly registered in the Graduate School at the beginning of that term.

(2) *Transfer of Graduate Credits.* Credit for graduate course work earned at another institution will be determined only after a student has spent one semester at Duke University. After completing his first semester, the student should file a request that his credits be reviewed and a decision made.

(3) *Graduate Credit for Courses Taken in the School of Law.* Upon the recommendation of the Director of Graduate Studies, and upon the approval of the Dean of the Graduate School, students in the social sciences may take certain courses in the School of Law for graduate credit. In some instances courses in the School of Law may be considered as fulfilling a student's requirements for a minor. To register for such courses, the student should present a letter from his Director of Graduate Studies to the Dean of the School of Law requesting permission to register for certain specified courses.

(4) *Reciprocal Agreement with the Consolidated University of North Carolina.* Under a plan of co-operation between the Consoli-

dated University of North Carolina and Duke University, students regularly enrolled in the Graduate Schools of the Consolidated University during the regular academic year, and paying full fees to that institution, may be admitted to a maximum of two courses per semester in the Graduate School of Duke University upon payment of a nominal registration fee of two dollars and of any other special fees regularly required of all students. Under the same arrangements, students in the Graduate School of Duke University may be admitted to course work at the Consolidated University of North Carolina. This arrangement is not in effect during Summer Sessions.

GRADES. Grades in the Graduate School are as follows: *E, G, S, F,* and *I*. *E* (exceptional) is the highest mark. *G* (good) and *S* (satisfactory) are the remaining passing marks. *F* (failing) is below passing, and *I* (incomplete) indicates that some portion of the student's work is lacking, for a satisfactory reason, at the time the grades are reported. The instructor who gives an *I* for a course specifies the date by which the student must have made up the deficiency. In no case may an extension be granted beyond one calendar year from the date the course ended. If the course is not completed, a statement of *No Credit* is made upon the student's record.

COURSES PRIMARILY FOR UNDERGRADUATES. Students granted provisional admission may on occasion be required as part of their program to take undergraduate courses as prerequisites to continued graduate study. Undergraduate courses thus taken and others elected by the student will carry no graduate credit.

In exceptional cases, 100-level courses *outside the major department* may be taken for graduate credit to a maximum of two one-semester courses or one year-course not exceeding a total of 8 units, when approved by the Directors of Graduate Studies in the major department and in the department in which the course is listed and the supervisor of the program.

NORMAL PROGRAMS. Normally graduate students who do not carry teaching or assisting duties carry a full load of graduate work until the requirements of the several degrees are met. A full load is 15 units a semester or 30 units for the academic year. Six units is a maximum load for one term of the Summer Session.

WITHDRAWAL AND INTERRUPTION OF PROGRAM

From a Course. After 14 days from the date of registration students may drop courses only with the approval of the Director of Graduate Studies, the instructor of the course to be dropped, and the Dean of the Graduate School. If the course is dropped without the necessary approval, the permanent record will list the course as *Dropped Unofficially, F.* If a course is dropped 30 days or more after

the beginning of the class for the semester involved, the status of the student at the time of withdrawal from the course will be determined and be indicated by the designation *Withdrew Passing* (W.P.) or *Withdrew Failing* (W.F.)

From the Graduate School. The University reserves the right, and matriculation by the student is a concession of this right, to ask the withdrawal of any student whose conduct at any time is not satisfactory to the University, even though no specific charge be made against the student. If a student wishes for any reason to withdraw from the Graduate School he should notify both the Director of Graduate Studies in his major department and the Dean of the Graduate School prior to the date of his expected withdrawal. (For refunds upon withdrawal, see below, p. 35.)

Students who find it necessary to interrupt their program of study for a period longer than a summer vacation should, before departure, leave with the Graduate Office a statement of the reason for interruption, mailing address, and expected date of return.

TRANSCRIPT. A student who wishes to transfer his credits from Duke University to another institution is entitled to one free transcript of his record. A fee of one dollar, payable in advance, is charged for each additional copy. Requests are directed to the Central Records Office.

SIZE OF CLASSES. Classes which carry graduate credit are limited in size to twenty-five students. In exceptional cases this regulation may be modified, but only by permission of the Executive Committee of the Graduate School Faculty on the recommendation of the department concerned. When courses numbered 200 to 299 carry graduate credit, they may include no more than three juniors and such juniors must, at the time of registration, have an over-all B average.

Language Requirements

Because a requirement for the A.M. degree is mastery of one acceptable foreign language, and for the Ph.D. is mastery of two, the prospective graduate student should attain mastery of at least one acceptable foreign language and preferably two before applying for admission. The facilities for graduate study are highly specialized and costly. The student who must lay them aside to acquire what he could have learned as an undergraduate is wasting his time.

ACCEPTABLE LANGUAGES. The languages normally required are French and German, but with the approval of the Dean of the Graduate School, a student may substitute for either of these another language which has a definite relation to the candidate's program of work for the degree.

MEETING THE REQUIREMENT. Language requirements may be met in three ways—by transcript, by a written examination taken upon first registration, by a reading examination.

1. BY TRANSCRIPT. A candidate for the A.M. degree may meet the language requirement by a transcript showing the completion, prior to earning the A.B. or B.S., of the third college year of one acceptable language or the second college year of each of two acceptable languages. A student who elects this procedure must, with the endorsement of the Director of Graduate Studies in his major department, write the Dean of the Graduate School for permission to do so.

   Under the conditions stated below, a candidate for the Ph.D. may, with the permission of the Dean of the Graduate School and of the chairman of the program committee, meet one of his language requirements by filing a transcript or certification showing that he has passed a comparable examination elsewhere. The conditions are that the examining graduate school have substantially the same language requirements as this Graduate School, that the examination have been passed while the student was pursuing a Ph.D. program in the same field as his declared major at Duke University or that the examination was required of all Ph.D. candidates regardless of field, and that the examination have been passed recently enough to indicate that the student retains command of the language.

2. BY WRITTEN EXAMINATION. On Monday of the fall registration period and on the day before spring registration, Reading, Vocabulary, and Grammar tests in French and German are offered (see the Calendar for hour and place). Any entering student engaging upon an A.M. or Ph.D. program who has not already taken these tests may take them. On the basis of his scores the student will (1) be certified as meeting requirements in these languages, (2) be advised to present himself for the regular reading examinations at the first opportunity, or (3) be advised to enroll in the special reading courses (see below).

3. BY READING EXAMINATION. At dates listed in the Calendar reading examinations in French, German, Spanish, and when requested Italian are offered. Reading examinations in other languages must be separately arranged.

   Students who require re-examination at scheduled times will be charged $5.00 for each re-examination; if special times are necessary, the fee will be $10.00.

SPECIAL READING COURSES. Special courses designed to assist graduate students in acquiring a reading knowledge of French

or German are offered for three hours a week, French during the fall semester, German during the spring semester and The Summer Session. A student who registers for either course must reduce his normal load of graduate courses by three units, with no reduction in fees. No auditors are permitted in these courses at any time. Undergraduates may not enroll during the academic year and may, with permission of the Dean of the Graduate School, in the Summer Session only if total registration permits.

REQUIREMENTS FOR FOREIGN STUDENTS. Foreign students whose native language is not English are, during their first registration period, required to take a test for minimum competence in English (see p. 17). Such students, with the approval of the Director of Graduate Studies in their major department, may request permission of the Dean of the Graduate School to substitute English for *one* of the required foreign languages. If permission is granted, a reading test in English, like those in French and German, will be arranged.

Degrees Offered

THE DEGREES OFFERED. The Graduate School of Arts and Sciences now offers the following degrees: Master of Arts (A.M.), Master of Science (M.S.), Master of Education (M.Ed.), Master of Arts in Teaching (M.A.T.), Doctor of Philosophy (Ph.D.), and the Doctor of Education (Ed.D.).

General Regulations Governing Master's Degrees

RESIDENCE REQUIREMENTS. Candidates for all Master's degrees must spend, as a *minimum,* one full academic year, or its equivalent in Summer Session terms, in residence at Duke University. Those who wish to complete their degrees wholly in the Summer Session must be in residence for five terms. Often more time will prove necessary in either case, depending upon the nature of the student's research problem if a thesis is offered and upon the student himself.

A Master's degree *without thesis* requires a *minimum* of 30 units of graduate credit in course and seminar work properly distributed between major and minor fields.

A Master's degree *with thesis* requires a *minimum* of 30 units of graduate credit; not less than 24 units must be in course or seminar work properly distributed between major and minor fields. If after completion of the 30-unit requirement the candidate remains in residence, he must register for a minimum of 3 units of residence per semester to be added to any course-seminar registration of 6 units or less, 2 with 7 units, 1 with 8 units, and none with 9 or more units.

A Master's candidate who presents a thesis when not registered in residence will be charged 3 units of residence for the semester or term in which the thesis is presented.

CANDIDACY FOR THE MASTER'S DEGREE. To be considered as a candidate for a Master's degree (A.M., M.S., M.Ed., M.A.T.), the graduate student must (1) have made passing grades in all courses taken during the first period of residence (if he registers for fewer than 12 units of graduate courses during his first period of residence, he must make passing grades on the initial 12 units of graduate courses), (2) have made a grade of *G* or *E* on at least 3 units of this work, and (3) have received the approval of the major department (or in the case of the M.A.T., of the supervisory committee).

TRANSFER OF GRADUATE CREDITS. (See above, p. 19.)

Under certain circumstances a maximum credit of 6 units may be allowed for graduate courses completed elsewhere. The acceptance of credit up to this amount, however, will not reduce the minimum period of full-time registered residence at Duke University.

With the approval of both the student's major department and the Dean of the Graduate School, a student who is granted such transfer credit may be permitted to register for as much as 12 units of thesis research instead of the usual 6 units. Or he may be permitted to fill out his schedule with as much as 6 units of further undergraduate training or 6 units of required language courses on the undergraduate level. In no case will credit be allowed for extension or correspondence courses.

TIME LIMITS FOR COMPLETION OF MASTER'S DEGREES. The candidate for the Master's degree who is in residence for consecutive academic years should complete all requirements for the degree within two calendar years from the date of his first registration in the Graduate School. Any candidate must complete all requirements within six calendar years of his first registration.

Credits earned over a long period of time cannot be credited toward a degree.

THE THESIS. The thesis should demonstrate the student's ability to collect, arrange, interpret, and report pertinent material on his special research problem. Although a publishable document is not required, the thesis must be written in an acceptable style and should exhibit the student's competence in scholarly methods and procedures. Requirements of form are set forth in the *Manual of Style for Theses and Dissertations.*

The Master of Arts Degree

PREREQUISITES. As prerequisites to graduate study in his major subject, the student must have completed a *minimum* of 12 semester hours of approved college courses in that subject, and 12 additional semester hours in that subject or in related work. Since some departments require more than 12 semester hours, the student should read carefully the special requirements listed by his major department, which are included as headnotes to the course offerings in the *Bulletin.*

LANGUAGE REQUIREMENTS. The candidate for the A.M. degree must have a reading knowledge of at least one foreign language. (The several departments reserve the right to specify which foreign languages are acceptable.) For methods of satisfying language requirements see p. 22. The language requirements must be satisfied before the Master's examination is taken.

MAJOR AND MINOR SUBJECT. In his graduate work the stu-

dent must present acceptable grades for a minimum of 24 units of graduate courses. Of these, at least 12 units must be in the major subject. The student must take a minimum of 6 units in a minor subject which is approved by his major department. The remaining 6 units of the required 24 may be taken in either the major or minor department, or in another approved by the major department and by the Dean of the Graduate School. In addition he must present a thesis, which carries a credit of 6 units for which he must register. Thus, his earned credit for the degree totals a minimum of 30 units.

FILING THE THESIS TITLE. At least one month before presenting the thesis or not later than March 1 (March 2 if March 1 falls on Sunday) of the academic year in which the degree is expected to be conferred, the student must file with the Dean of the Graduate School, on the official form, the title of the thesis and declaration of intention to graduate. The title must have the approval of the Director of Graduate Studies in the major department, and of the instructor under whose direction the thesis will be written. During the Summer Session title and declaration must be filed at least one month prior to first presentation of the thesis.

PREPARING THE THESIS. All basic requirements for preparing the thesis are described in the *Manual of Style for Theses and Dissertations* obtained at the Duke University Book Store, West Campus. The thesis must be typed on the following grade of paper: the original must be green-lined paper of at least sixteen-pound weight, the three copies must be on paper of at least thirteen-pound weight. Both grades of paper must be of seventy-five percent rag content. Thesis binding and other particulars are prescribed in the *Manual.*

SUBMITTING THE THESIS. Four bound, typewritten copies of the thesis must be submitted in approved form to the Dean of the Graduate School on or before May 1 (May 2 if May 1 falls on Sunday) preceding the June commencement at which the degree will be conferred. The copies will then be distributed to the several members of the examining committee. The thesis must be submitted to the Graduate Office from three to five days before the scheduled date of the student's examination. Students should plan to allow at least four days for the process of binding the thesis at Seeman Printery.

THE EXAMINING COMMITTEE AND THE EXAMINATION. The instructor who directs the thesis appoints an examining committee composed of the director of the thesis and two other members of the Graduate Faculty, one of whom must be from a department other than that of the major. This committee is submitted for approval to the Dean of the Graduate School when the thesis is first presented.

The candidate appears before this committee for an examination

which lasts for about one and one-half hours. The subject matter covered in the examination is usually restricted to the thesis and to the major field.

If the candidate passes his examination, the examining committee certifies this fact by signing the title page of the thesis. The candidate then returns the original and one carbon copy of the thesis to the Dean of the Graduate School, who deposits them in the University Library.

The Master of Science Degree

PREREQUISITES. The degree of Master of Science is offered in the fields of Civil, Electrical, and Mechanical Engineering. As prerequisites to this degree the student must have earned a Bachelor's degree from an accredited engineering college and have completed a minimum of 12 semester hours work in the major field.

FOREIGN LANGUAGE. There is no foreign language requirement for this degree.

MAJOR AND MINOR SUBJECTS. The work for the Master of Science degree is designed to provide a broad foundation in the science of civil, electrical, and mechanical engineering. The student must present acceptable grades for a minimum of 24 units of graduate courses. Of these, at least 12 units must be in the major subject. He must also take a minimum of 12 units of minor work in the Departments of Mathematics and either Physics or Chemistry. In addition to these he must present a thesis, which carries a credit of 6 units. Thus his earned credit for the degree totals a minimum of 30 units.

REGULATIONS AND PROCEDURES. The regulations and procedures and the provisions for examination and an examining committee are the same as those for the Master of Arts degree.

The Master of Education Degree

PREREQUISITES. Before a student is admitted to graduate study for this degree, he should have completed, on the undergraduate level, a minimum of 18 semester hours of approved work in Education.

Before the degree is conferred the student must have had one year of actual teaching experience, or have met certification requirements by supervised student teaching in an accredited school. Such supervised student teaching may be at either the undergraduate or the graduate level.

REQUIREMENTS FOR THE DEGREE. The Master of Education degree may be earned either with or without the presentation of a thesis.

Without thesis: The required work includes a departmental major (Elementary Education, School Administration and Supervision, or Secondary Education) of at least 12 units, and a minor of at least 6 units outside the Department of Education. The remaining 12 units are elective within the area of Education and the minor field, but require the approval of the student's major adviser and the Director of Graduate Studies.

Toward the end of his residence the student must pass a comprehensive examination on his departmental major. This examination shall be prepared and conducted by the instructors of the student's major as designated by the Director of Graduate Studies of the Department of Education. Request to take this examination should be made to the Director of Graduate Studies at least two weeks before the date on which the examination is to be conducted.

With thesis: Students who elect this plan are permitted to substitute a thesis for 6 units of the required course work. The thesis subject must be approved by the instructor who is to direct it, and by the Director of Graduate Studies.

In addition to the thesis, the student must present at least 24 units of course credit. Of these, 12 units must be taken in the student's departmental major. Six units, constituting a minor, must be taken outside of the Department of Education. The remaining 6 units are elective within the area of Education and the minor field, but require the approval of the student's major adviser and the Director of Graduate Studies.

The regulations governing the thesis are the same as those for the Master of Arts degree. (see p. 26).

The Master of Arts in Teaching Degree

PREREQUISITES. The degree of Master of Arts in Teaching is designed for teachers already in service and for recent graduates of liberal arts colleges who wish to enter public school teaching.

A student should normally have completed a minimum of 12 semester hours in his proposed major subject and an additional 12 semester hours in that or related subjects. Should a student wish to undertake a graduate major different from his undergraduate major, the prerequisites may be modified upon the recommendation of the student's committee and the approval of the Dean of the Graduate School.

PROGRAMS FOR THE DEGREE. Either of two programs may be arranged, in consultation with the student's committee:

A. A major in Education of 18 to 24 units and 6 to 12 units in non-education courses.

B. A major in non-education courses of 18 to 24 units and 6 to 12 units in Education.

In both programs a minimum of 30 units is required.

The non-education courses are to be taken in one or more subjects ordinarily taught in the secondary schools. The amount and distribution of this work will be determined by the needs of the individual student. A major in Biological Sciences or in Physical Sciences is possible in this program.

The Master of Arts in Teaching may be earned with or without the presentation of a thesis. If a student, in consultation with his committee, elects to present a thesis, 6 units of the total of 30 units required will be allotted to thesis research. He will then be required to complete 24 units of course credits. The regulations governing the thesis, are the same as those for the A.M. (see p. 26). Candidates for the Master of Arts in Teaching who have not had teaching experience are required to take Education 215-216 in which case a minimum of 36 units is required.

THE COMMITTEE. Each candidate for the degree will be assigned a committee, appointed by the Director of Graduate Studies in the major department or area. This committee will consist of three members, at least one of whom will be from the Department of Education, and at least one from another department. The chairman of the committee will normally be chosen from the department of the major.

The Doctor of Philosophy Degree

The Ph.D. degree is essentially a research degree. Although course work is a necessary part of the student's program, the mere accumulation of course credits will not be sufficient for attaining this degree. The granting of the Ph.D. is based primarily upon the student's knowledge of a specialized field of study and upon the production of an acceptable dissertation embodying the results of original research.

REQUIREMENTS FOR THE PH.D. DEGREE. The formal requirements, discussed in detail below, for the Ph.D. degree are as follows: (1) foreign languages; (2) major and minor courses; (3) supervisory committee for program of study; (4) residence; (5) preliminary examination; (6) dissertation; (7) final examination. In order to be considered for candidacy for the Ph.D. degree, the student must have passed all of his course work in the first year of graduate study; on at least 9 units of course work he must have made a grade of *G* or better.

FOREIGN LANGUAGES. Normally, a reading knowledge of both French and German is required. (For methods of meeting this requirement, see p. 22.)

A student working toward the doctoral degree should complete the language requirements for that degree by the end of his first year of residence. If he fails to meet these requirements by the end of his third semester of residence, he must register in the appropriate special reading course or courses (see page 22) until he has satisfied the requirements.

MAJOR AND MINOR. The student's program of study necessarily demands substantial concentration on courses in his major department. Enough work must be taken in another department to constitute an acceptable minor. Exceptions which permit both the major and minor within the same department are allowed only by the special permission of the Dean of the Graduate School.

COMMITTEE TO SUPERVISE THE PROGRAM OF STUDY. The program of study should normally be submitted during the third semester of graduate work for students who entered with a Bachelor's degree and during the second semester's residence for students entering with a Master's degree or equivalent. The five members of the supervisory committee are appointed by the Dean of the Graduate School upon the recommendation of the Director of Graduate Studies of the major department. This committee, with the instructor who is to direct the student's research serving as chairman, formulates the program of study, which is submitted to the Dean of the Graduate School for his approval. Of the five members, one must be from a department (usually the minor) other than the major department. This committee, with occasional necessary changes, serves also as the examining committee for both the preliminary and the final Ph.D. examinations.

RESIDENCE. For students first registering in September 1959 or thereafter the *minimum residence* requirement is 60 units of graduate credit not more than 30 units of which may be accepted by transfer. Since a full program is 30 units per academic year, the prospective Ph.D. candidate who enters with the A.B. or B.S. degree must plan to spend in residence a *minimum* of two academic years; if he enters with the A.M., his *mimimum* residence is one academic year. If there are undergraduate deficiencies in his program, he may in addition to the minimum requirements be required to take preliminary undergraduate courses for which he will not receive graduate credit. Even if there are no such undergraduate deficiencies, the student's supervisory committee will determine what residence requirements if any above the minimum the student must meet.

Resident doctoral degree students normally register for 15 units per semester, unless they are subject to load limitations dictated by appointment restrictions or by employment. The *normal registration*

will carry through that semester in which the preliminary examination has been passed.

A student who remains in residence after passing the preliminary examination must register for a minimum of 3 units of residence per semester to be added to any course-seminar registration of 6 units or less, 2 with 7 units, 1 with 8 units, and none with 9 or more units.

Candidates not in residence register and pay fees for one unit each semester *in absentia* if they are to remain candidates.

Any courses, language certifications, or other credits for advanced standing which are more than six calendar years old at the beginning of the semester in which preliminary examinations are passed will not be accepted toward fulfilling the minimum requirements of the doctoral degree.

CREDIT FOR SUMMER WORK. Credit earned in the Summer Session will not reduce the minimum required residence of one academic year.

PRELIMINARY EXAMINATION. A student is not accepted as a candidate for the Ph.D. degree until he has passed the preliminary examination. A transfer student who may have passed a preliminary examination elsewhere must nevertheless take the examination in this Graduate School. The examination ordinarily covers both the major and minor fields.

Normally the student should pass this examination by the end of his second year of resident graduate work. If he has not passed it by the middle of his third year, he must file with the Dean of the Graduate School a statement explaining the delay and setting a date for the examination. Except under unusual circumstances, extension will not be granted beyond the end of the third year.

PRIVILEGE OF RE-EXAMINATION. Should the student fail the preliminary examination, he may apply, with the consent of his supervisory committee and of the Dean of the Graduate School, for the privilege of a second examination to be taken no sooner than six months after the date of the first. Failure on the second examination will render the student ineligible to continue his program for the Ph.D. degree at Duke University.

THE DISSERTATION. The dissertation is expected to be a mature and competent piece of writing, embodying the results of significant and original research.

TIME LIMITS. The expectation is that the doctoral dissertation will be submitted and accepted within two calendar years after the preliminary examination is passed. Should the dissertation not be submitted and accepted within four calendar years after the examination, the candidate, with the approval of his committee, may petition the Dean of the Graduate School for an extension of one year.

If the dissertation should not be submitted and accepted within five years after the examination, to remain a candidate for the degree the student must pass a second preliminary examination. In such a case, the time limit for submitting the dissertation will be determined by the Dean of the Graduate School and the candidate's committee.

For the student registered for the first time in September 1959 these limits are fully effective. For the student who registered before September 1959 the time limits are effective as though he first registered at that time.

Filing Title. On or before March 1 (March 2 if March 1 falls on Sunday) preceding the June commencement at which the degree is expected to be conferred, the student must file with the Dean of the Graduate School, on the official form to be obtained from the Graduate Office, the title of the dissertation. This title must receive the written approval of both the Director of Graduate Studies of the student's major department and the professor who directs the dissertation.

Form. The basic requirements for preparing the dissertation are described in the instructions for microfilming (see below) and in the *Manual of Style for Theses and Dissertations* to be obtained from the Duke University Book Store, West Campus. The dissertation must be typed on the following grades of paper: the original must be on green-lined paper of at least sixteen-pound weight; the three copies must be on paper of at least thirteen-pound weight. Both grades of paper must be of seventy-five percent rag content.

Submitting Dissertation. The dissertation must be completed to the satisfaction of the instructor who directs it. Four typewritten copies, the original unbound and three copies bound, must be deposited with the Dean of the Graduate School on or before *April 15* preceding the June commencement when the degree is to be conferred. The dissertation must be submitted to the Graduate Office from seven to ten days before the scheduled date of the student's examination.

PUBLICATION ON MICROFILM. All doctoral dissertations will normally be published on microfilm through University Microfilms, Ann Arbor, Michigan. Authors may, if they wish, also copyright them. The abstract will be published in *Dissertation Abstracts. Before final typing is completed, the candidate should obtain in the Graduate Office detailed instructions on the procedure* together with a microfilming agreement which is signed and returned when the dissertation is finally deposited in the Graduate Office.

In brief, the original copy of the dissertation, in clean type, will remain unbound except for a spring binder. When the carbon copies are bound, a cover, unattached, is prepared for the original copy. Ten copies of an *abstract,* carefully written and not more than 600 words

long, are submitted when the dissertation is first presented to the Graduate Office. A non-returnable dissertation fee of $25 is charged for handling and microfilming. If copyright is desired, an additional fee is charged of $6 plus 2½ cents per page.

FINAL EXAMINATION. The final oral examination shall be primarily on the dissertation. Questions may, however, be asked in the candidate's major field.

If a student fails his final examination, he may be allowed to take it for a second time, but not sooner than six months from the date of his first. Permission to take the second examination must be obtained from the instructor who directed the dissertation and from the Dean of the Graduate School. Failure to pass the second examination renders the student ineligible to continue work for the Ph.D. degree at Duke University.

The Doctor of Education Degree

The Doctor of Education is a professional degree planned for those who are, or intend to become, school administrators, supervisors, directors of instruction, curriculum consultants, or college teachers of education.

ADMISSION. The candidate for the Ed.D. degree must meet the same requirements for admission to the Graduate School as the candidate for the Ph.D. degree. In addition to these uniform requirements, the candidate for the Ed.D. (1) must have had at least two years' experience in educational work; (2) must present strong letters of appraisal and recommendation from persons well qualified to speak with authority of his abilities; and (3) must present himself, if possible, for a personal interview. The Standing Committee on the Ed.D. degree reserves the right to insist upon an interview.

RESIDENCE, ETC. Regulations concerning residence requirements, grades required during the first year of graduate study, and the preliminary examination are the same as those for the Ph.D. (See pp. 29-31).

FOREIGN LANGUAGES. There are no foreign language requirements for the Ed.D. degree.

PROGRAM OF WORK. The candidate for the Ed.D. degree will choose as his major field either Educational Administration and Supervision or Curriculum and Instruction.

Candidates in Administration and Supervision will take approximately 24 units in that field, including the seminar in School Administration. In addition, they will take approximately 24 units in other professional courses and a minor of at least 24 units approved by the candidate's supervisory committee and the Standing Committee on the Ed.D. degree.

Candidates in Curriculum and Instruction will take approximately 24 units in Curriculum and Instruction. In addition, they will take from 12 to 24 units in other professional courses, and a minor of from 24 to 36 units in the humanities, the natural sciences, or the social sciences, exclusive of professional education.*

The program of work for each candidate must be approved by the Standing Committee for the Ed.D. degree.

DISSERTATION. The candidate must write a dissertation, for which the formalities of presentation, including its defense in a final examination, are the same as those for the Ph.D. degree. The type of dissertation will depend upon which of the following plans the candidate adopts:

Plan A. A candidate choosing Plan A will write a dissertation which is expected to be a mature and competent piece of writing, embodying the results of significant and original research. It must be, in essence, a contribution to knowledge.

Plan B. A candidate choosing Plan B will serve at least a year in an administrative post, or a teaching position in an elementary or secondary school, subsequent to the completion of the second year of residence. His dissertation may be concerned with a problem, or several closely related problems, growing out of this experience. Although the dissertation written under Plan B is of a practical nature, it must demonstrate the candidate's ability to investigate and report on a significant phase of education in his major field.

PUBLICATION ON MICROFILM. The dissertation will be published on microfilm, as is the dissertation for the Ph.D. (See p. 32.)

FINAL EXAMINATION. Regulations for the final examination are identical with those for the Ph.D. degree. (See p. 33.)

*Revision of unit requirements is now being considered. Please consult the Department for current status.

Awards and Fees

Fellowships, Scholarships, and Assistantships

FOR the encouragement and financial assistance of graduate students of marked ability, Duke University has established a considerable number of fellowships, scholarships, and assistantships. The stipends for these range from $500 to $3,000. Holders of grants pay tuition and other fees regularly required of all graduate students.

Fellows and scholars pay full tuition and fees and are registered for a full schedule of course work and receive full residence credit. In general, assistants pay 12 units tuition and fees, are registered for 12 units, and receive 12 units residence credit.

APPLICATION FOR GRANTS. Applications for these grants, along with all supporting documents, must be submitted on or before February 15. Notification of awards is made about April 1. Late applications will be considered, should any vacancies occur in the list of appointees. No appointment is made for longer than one academic year.

Further information and application forms may be obtained from the Dean of the Graduate School, Duke University.

Grants offered for 1960-61 are:

FELLOWSHIPS: Approximately thirty-five James B. Duke Fellowships with stipends of $3000; one Angier Duke Memorial Fellowship of $2,300; one Ottis Green Foundation Fellowship in Humanities or Social Sciences of $1600; four Gurney Harriss Kearns Fellowships in Religion ranging from $1,600 to $2,000; University Fellowships ranging from $1,000 to $2400.

GRADUATE SCHOLARSHIPS. Graduate Scholarships of $975 to $2000 for first-year graduate students who plan to enter the basic fields of Arts, Sciences, and Social Studies; University Scholarships ranging from $500 to $1750.

GRADUATE ASSISTANTSHIPS. Appointments as Departmental Assistants and readers carry a total stipend in the range of $1000 to $2450. The value of the stipend is determined by the fraction of time given to assisting, the qualifications of the assistant, and the nature of work assigned.

RESEARCH ASSISTANTSHIPS. Appointment for predoctoral candidates whose special training and qualifications enable them to

serve as assistants to individual staff members in certain departments. Stipends range from $400 to $3000 based on the assisting time required.

Appointments to qualified, advanced students as Research Associates, Research Fellows, and Research Scholars. Stipends range upward from about $1,500.

COKESBURY GRADUATE AWARDS IN COLLEGE TEACHING. These awards, sponsored by the Board of Education of the Methodist Church, are designed to assist graduate students who are committed to a Christian philosophy of higher education and who intend to teach in college. The applicant must have been a member of the Methodist Church for at least three years, and must have been accepted for or be currently pursuing a program of graduate studies at one of the Methodist-related universities, including Duke University, approved for this program. Awards, for one year, vary in amount from $500 to $2500.

Applications must be completed before March 1. For further information and application forms, apply to the Dean of the Graduate School.

CHARLES W. HARGITT RESEARCH FELLOWSHIP IN ZOOLOGY. The Charles W. Hargitt Research Fellowship in Zoology is devoted to the promotion of research in the field of cellular studies. It may be awarded to post-doctoral candidates or established investigators who desire to engage in full-time research, and to predoctoral candidates in support of their graduate training. Awards at the post-doctoral level will vary, depending on previous training and experience, but in general will be equivalent to that of a first-year instructor and may be higher in the case of established investigators. Awards at the predoctoral level will range from $2,000 to $3,000. The recipient will be expected to engage in full-time research or training and will have no departmental duties. Research facilities will be provided. Appointment is for one year with the possibility of reappointment.

Inquiries and applications should be addressed to Dr. H. S. Roberts, Department of Zoology.

LILLY ENDOWMENT FELLOWSHIPS IN POLITICAL SCIENCE. These fellowships are available to qualified students who seek a Ph.D. in political science and who have an interest in exploring some aspect of the relationship between Christianity and the social order. Lilly Endowment Fellows will take their minor work in the Graduate Department of Religion and will ordinarily write their dissertations in the field of political theory. The stipend is $2,600. Appointment is for one year with the possibility of reappointment. Inquiries and applications should be made to Professor John H. Hallowell, Department of Political Science, Duke University.

FELLOWSHIPS AND GRADUATE SCHOLARSHIPS IN FORESTRY. Information regarding special fellowships and graduate scholarships in forestry may be obtained from the Dean of the School of Forestry, Duke University, Durham, North Carolina.

FEDERAL FELLOWSHIP PROGRAMS. Duke University has been approved to offer programs sustained by National Defense Act Graduate Fellowships in Anatomy-Psychology, English and American Literature, History, and Political Science. In addition, the University is approved to recommend a certain number of applicants for Cooperative Graduate Fellowships and Summer Fellowships for Graduate Teaching Assistants offered by the National Science Foundation.

PART-TIME INSTRUCTORS. A number of departments offering graduate work make use of exceptionally qualified graduate students as part-time instructors. These students are usually able to register for a graduate program of 9 units. Inquiries concerning such appointments should be directed to the Chairman of the Department concerned.

PAYMENTS TO HOLDERS OF GRANTS. Payments of stipends to all graduate students holding fellowships, scholarships, and graduate assistantships for the academic year are made by the Treasurer of the University in eight monthly installments payable on the 20th of each month beginning October 20th. Arrangements may be made to prorate tuition charges on the same basis.

LOANS. The University has been allotted a sum for use under the provisions of the National Defense Act Loan fund. In addition, University funds are available to grant low-interest loans to deserving students of good academic standing. Application should be made to Mr. Robert L. Thompson, 217 Allen Building, Duke University.

Financial Regulations

The Graduate School awards such financial aid as fellowships, scholarships, and assistantships. The several departments engage part-time instructors who may be graduate students. The Treasurer of the University, however, has sole responsibility for paying stipends to students, collecting from them such fees as are due, and making special arrangements for prorating fees.

GENERAL FEES IN THE ACADEMIC YEAR. The following table shows the general fees and charges collected from all students. All fees for each semester are due and payable, unless otherwise specified, at the time of registration for that semester. No student is admitted to classes until arrangements have been made with the Treasurer of the University for the settlement of fees.

Tuition and general fees* ($32.50 per unit).....$487.50
Athletic Fee, not including federal tax, optional, per year, payable in the fall semester..... 10.00
Room rent (see detailed statement p. 39.)
Fee for Microfilming, payable by candidates for a doctoral degree when the dissertation is presented to the Graduate Office after the final examination..... 25.00

* General fees, in lieu of most special charges, include the following fees: Matriculation, Medical, Library, Damage, Commencement, Diploma, and an average of the Laboratory and Materials Fees.

Tuition and fees for a full semester program of 15 units amount to $487.50. For a part program, tuition and fees are computed at the rate of $32.50 per unit.

SPECIAL FEES FOR TEACHERS AND OTHERS. The Graduate School recognizes a special obligation to encourage the following types of students in their professional and personal advancement: (1) members of the faculties of the neighboring public schools and colleges, currently engaged in full-time teaching while taking courses in the Graduate School, (2) ministers of neighboring churches, (3) wives of Duke faculty members, (4) full-time employees of Duke University who are paid on a monthly basis throughout the year. The reduced fees do not apply to teachers and ministers while on leave of absence, nor to holders of fellowships, scholarships, or assistantships, nor to part-time instructors.

Persons eligible for the reduced fee must meet the admission standards required of all graduate students and must be admitted to the Graduate School. They may enroll for one or two courses per semester (in no case totaling more than 7 units) upon the payment of a fee of $5.00 for registration for each semester and a tuition fee of $12.50 per unit of credit. Such students are not covered by Student Health provisions.

WITHDRAWAL FROM A COURSE OR FROM THE GRADUATE SCHOOL. Arrangements made with the Treasurer to prorate tuition and fees due do not imply that the full amount is not due and payable. A student who after 14 days after the date of registration withdraws from a course or from the Graduate School is liable for payment of full tuition fees and room rent.

STIPENDS AND INCOME TAX. Ordinarily stipends awarded under fellowships and scholarships are not subject to income tax. However, a portion of the award to graduate assistants may be subject to tax. The Graduate Office will supply detailed information.

Living Accommodations

The Men's Graduate Center is available to men of the graduate and professional schools. The rooms are equipped for two persons and the rental charge for a double room is $400.00 for the academic

year or $200.00 for each occupant, or $100.00 per semester for each occupant.

Epworth Hall on the Woman's College Campus is available to women of the graduate and professional schools. The rental charge for a single room is $275.00 for the academic year or $137.50 each semester. The rental charge for a double room is $450.00 for the academic year or $225.00 for each occupant, or $112.50 per semester for each occupant.

The University does not operate housing facilities for married students. Married students should arrange for rooms or apartments in the city. In order to aid married students, the Housing Bureau maintains a file on rooms and apartments listed for rental to Duke students.

Applications for rooms are to be made to the Housing Bureau, Duke University, Durham, N. C. The rooms are rented for a period of not less than one semester or, in the case of a medical student, one term. No refund of room rent will be made except for involuntary withdrawal to enter the armed services. Such refunds will be made in accordance with the University's established schedule.

Regulations governing the occupancy of rooms will be supplied directly from the Housing Bureau when the reservations are made. Occupants are expected to abide by these regulations.

DINING SERVICE. Food service on both the Woman's College Campus and the West Campus is cafeteria style. The cost of meals approximates $1.75 to $2.25 per day, depending upon the need and taste of the individual. The dining facilities on the West Campus include three cafeterias with multiple-choice menus, a grill, and, in addition, the Oak Room where full meals and a la carte items are served. The Men's Graduate Center has a cafeteria open at meal hours, and a coffee lounge which is open until 11:00 P.M. The prices are the same as in the West Campus Union. Because of the large number of those served in the dining halls, it is not possible to arrange special diets for individual students.

MEDICAL CARE. The complete medical facilities of the Duke University Medical Center are available to all members of the University community. To secure the benefits of the Student Health program, a graduate student during the term or semester in which the illness occurs must 1) in the Summer Session term be registered for at least 3 units, 2) prior to completing minimum residence requirements be registered for at least 9 units per semester and thereafter according to the schedule on pp. 24 and 31. Students are not covered during vacations and their dependents and members of their family are not covered at any time. Care is provided for men at the Student

Health Office in Duke Hospital and for women at the Woman's College Infirmary.

The service provided includes hospitalization in Duke Hospital, when recommended by the Hospital staff, to a limit of thirty days; medical and surgical care under the supervision of a senior physician or surgeon; drugs, X-ray work, and ward nursing. Students pay for board while in the hospital. Excluded from the service are refraction of eyes, treatment of teeth, and of all chronic and pre-existing conditions, and elective surgery.

Graduate students are urged to carry adequate health insurance to supplement Student Health Program services. If students have insurance providing hospitalization, surgical, or medical benefits, the benefit shall be applied to the cost of their medical care.

Only those students whose course-load entitles them to full coverage under the Student Health program are eligible for a supplementary insurance policy which then comprises protection for the entire calendar year. Concerning this supplementary policy inquire of the Dean of the Graduate School.

MOTOR VEHICLES. Every motor vehicle operated on the campus by students enrolled in Duke University must be registered at 07 Allen Building within five days after arrival and thereafter must display the proper decal emblem. To register a vehicle, the student should present the following documents: (1) state vehicle registration, (2) state operator's license, (3) evidence of automobile liability insurance as required by North Carolina law ($5,000 per person, $10,000 per accident for personal injuries; $5,000 for property damage).

STUDENT ACTIVITIES. Graduate students new to Duke University may be reminded that they are welcomed to use such recreation facilities as swimming pools, tennis courts, golf course, and to affiliate with choral, drama, and religious groups. They may become junior members of the American Association of University Professors and may affiliate with Phi Beta Kappa and social fraternities.

BUREAU OF TESTING AND GUIDANCE. The University maintains a Bureau of Testing and Guidance which provides a centralized program of educational, vocational, and personal counseling for students. In addition, the Bureau administers special group testing programs for University schools and departments and serves as the local testing center for a wide variety of national testing programs. The Bureau also carries on programs of research in the field of measurement and counseling.

APPOINTMENTS OFFICE. Duke University maintains an active Appointments Office which has steadily been placing students in teaching and industrial positions. The services of this office are available without charge to graduate students. Those who are interested in

securing employment through the Appointments Office, or those who wish to have available for their own use in securing employment a complete file containing their academic record and pertinent recommendations, should register in this office.

ESTIMATED EXPENSES IN THE ACADEMIC YEAR. The necessary expenses of a graduate student are moderate. The University dormitories and Unions provide comfortable and wholesome living conditions at a minimum cost. Incidental expenses for recreation, traveling, clothes, and other items naturally depend on the tastes and habits of the individual. The table below lists the necessary *college* expenses for one academic year for a full program of work:

	Low	*Moderate*	*Liberal*
Tuition and fees	$ 975.00	$ 975.00	$ 975.00
Room Rent	200.00	200.00	250.00
Board	450.00	500.00	525.00
Laundry	30.00	40.00	50.00
Books	30.00	40.00	50.00
	$1685.00	$1755.00	$1850.00

Facilities for Graduate Study

The Libraries

THE University Libraries contained 1,390,540 volumes on July 1, 1959. In addition to the collections in the General Library, there are eight school and departmental libraries: Divinity, 88,649 volumes; Engineering, 27,423 volumes; Law, 116,391 volumes; Medical, 67,222 volumes; Woman's College, 121,220 volumes; Biology-Forestry, 67,462 volumes; Chemistry, 18,243 volumes; Mathematics-Physics, 21,872 volumes. In 1957-58, 48,488 volumes were added; 5,114 periodicals and 99 newspapers are received currently.

The General Library building, which was doubled in size in 1949, incorporates many modern arrangements for the preservation of the collections and for the convenience of the research scholar. Book stacks, storage areas, and quarters for rare books and manuscripts are air-conditioned. In the stacks, 274 carrels are available to graduate students as places of study, and a large reading room on the first floor of the building is reserved for graduate students. Upon application, graduate students may receive permit cards entitling them to use of the stacks.

A division of photographic services, with the most modern cameras and other equipment for microfilming or other photographic reproduction of printed and manuscript materials, provides a battery of reading machines to serve the Library's large collection of microfilms of rare books, periodicals, and newspapers.

The extensive resources of the Library for research students may be suggested by the following special collections:

THE TRENT COLLECTION OF WALT WHITMAN, containing the first and all other important early editions or issues of *Leaves of Grass;* books and articles of Whitman biography and criticism; nearly 300 manuscripts and 400 letters; and pictures, sheet music, and other miscellanea.

THE GEORGE WASHINGTON FLOWERS COLLECTION of books, manuscripts, pamphlets, and newspapers on all phases of Southern history.

THE ARENTS COLLECTION of several hundred volumes relating to the culture and production of tobacco and the manufacture and distribution of tobacco products.

THE JAMES A. THOMAS COLLECTION of books on Chinese history and culture.

THE GUIDO MAZZONI LIBRARY, a collection of approximately 23,000 volumes and 67,000 pamphlets covering the whole range of Italian literature, with special strength in the nineteenth century.

THE GUSTAVE LANSON LIBRARY of 12,000 books and monographs on French literature.

LATIN-AMERICAN COLLECTIONS, built around a special Peruvian library of 7,000 books and manuscripts, a Brazilian library of several thousand volumes, and an Ecuadorian library of 2,000 volumes, supplemented by strong collections of the public documents of these and other Latin-American countries.

THE ROBERTSON LIBRARY of Philippiniana.

THE FRANK C. BROWN FOLKLORE COLLECTION, consisting of about 38,000 manuscript pieces, 1,400 vocal recordings, and 650 musical scores of North Carolina folklore.

THE STRISOWER LIBRARY of International Law, numbering about 5,000 volumes, with many rare books and periodical files.

THE TRENT COLLECTION IN THE HISTORY OF MEDICINE (Hospital Library), containing about 3,000 books and 2,500 manuscripts, with special strength in anesthesia, anatomy, English medicine, vaccination, yellow fever, pharmacy, and medical biography.

THE HOLL CHURCH HISTORY LIBRARY, dealing primarily with the period of the Reformation.

COLLECTIONS IN ENGLISH AND AMERICAN LITERATURE, where emphasis has been placed principally on the eighteenth and nineteenth centuries, with collections of Swinburne, Tennyson, Rossetti, and Bryant, significant groups of annotated copies and first editions of Coleridge and Byron, the Carroll Wilson collection of Emerson, some 5,000 items of eighteenth-century English poetry and prose, and the Paul Hamilton Hayne library of American literature.

In addition to these and other special collections, the Libraries contain excellent files of United States federal and state documents, public documents of many European and Latin-American countries, and publications of European academies and learned societies. The newspaper collection, with 13,250 volumes and 11,049 reels of microfilms, has several long eighteenth-century files, strong holdings of nineteenth-century New England papers, and of ante-Bellum and Civil War papers from North Carolina, South Carolina, and Virginia; there are also many European and Latin-American papers. The manuscript collection of 2,722,087 items is particularly strong in all phases of the history, politics, and social and economic life of the South Atlantic region, though it includes also significant papers in

English and American literature, and several notable medieval manuscripts in both Greek and Latin.

HISPANIC STUDIES PROGRAM. The Graduate School offers an inter-departmental program of Hispanic studies leading to the A.M. and Ph.D. degrees. Students may write their theses and take their degrees in history, economics, political science, sociology, and Hispanic languages and literatures. The purpose of the program is to make possible desirable combinations of courses on the Hispanic world in these related disciplines and to bring to bear more strength of the faculty upon the training of a single candidate. This may be achieved through a judicious use of minors or by such special arrangements as may from time to time become necessary.

The Duke University Library holdings have been built up to facilitate graduate work and research in Hispanic-American cultural history, inter-American relations, economic history, politics, and Spanish-American literature. These collections are being constantly enlarged.

Science Laboratories

BOTANICAL AND ZOOLOGICAL LABORATORIES. Facilities for graduate study in the Departments of Botany and Zoology are located on both the East and the West Campuses. In addition to well-equipped laboratories for teaching and research in the various fields of botany and zoology, special facilities are available, such as animal rooms, greenhouses, darkrooms, refrigerated and air-conditioned rooms, radiation and radioisotope equipment, and other modern research facilities.

The Botany Herbarium, containing over 200,000 specimens, is particularly strong in material from the Southeast and includes notable collections of mosses, ferns, lichens and grasses. The Biology-Forestry Library contains an outstanding collection of books and periodicals. The Library currently subscribes to over 550 journals and has 67,400 volumes. Unique assets for teaching and research are the Sarah P. Duke Gardens, conveniently located on the West Campus; the Duke Forest, comprising 7,200 acres of woodland adjacent to the West Campus; and the Duke University Marine Laboratory at Beaufort, North Carolina.

Scholarships for advanced study during the summer months are maintained at the Highlands Laboratory, Highlands, North Carolina, at the Marine Biological Laboratory, Woods Hole, Massachusetts, and at the Duke University Marine Laboratory. Requests for information concerning the scholarships at the Highlands Laboratory should be addressed to the Botany Department, those concerning scholarships

at the Duke Marine Laboratory and at Woods Hole to the Zoology Department.

MARINE LABORATORY. Located at Beaufort, N. C., the Duke University Marine Laboratory was founded in 1938 as a result of the efforts of the late Professor A. S. Pearse. The excellent facilities, including four research buildings, classrooms, running sea water, motor vessels, living quarters and food service, provide excellent facilities for graduate courses in botany and zoology every summer, and for research activities throughout the year. Ten National Science Foundation predoctoral awards and four post-doctoral awards will be offered in 1960 for course or research work at the Marine Laboratory.

For information concerning these awards or for information about courses and research space at the Duke Marine Laboratory, write to the Director, Dr. C. G. Bookhout, Department of Zoology, Duke University, Durham, N. C.

PHYSICAL LABORATORIES. The Physics Building, comprising about 77,000 square feet of floor space, is devoted to the research and instruction of the Departments of Physics and Mathematics.

In addition to the lecture halls and the elementary laboratories, the building includes special laboratories for work in electrical measurements, electronics, microwaves, optical spectroscopy, atomic, nuclear, and low-temperature physics. Special research equipment includes a 21-foot concave grating and other instruments for visible, ultraviolet, and Raman spectra; facilities for research in microwave spectroscopy and other high-frequency phenomena; crystal counters and a liquid helium bubble chamber for use in high-energy particle research; a four-million-volt Van de Graaff accelerator and associated equipment for nuclear physics research; a helium liquifier, other low temperature equipment, and a large electromagnet for nuclear resonance research below 1° Kelvin.

The Physics Building contains the Mathematics-Physics library, and a shop staffed by six instrument mechanics, three electronics technicians, and a glass blower.

CHEMISTRY LABORATORIES. The Chemistry Building is a modern laboratory with a floor area of approximately 57,000 square feet. Of this space, over half is devoted to research and advanced teaching. Excellent facilities for research are available, including recording spectrophotometers for ultraviolet, visible, and infrared spectroscopy, a grating spectrograph, recording polarographs, paramagnetic resonance absorption equipment, and equipment for light-scattering measurements and vapor phase chromatography.

A well-equipped shop, operated by a competent mechanic, provides facilities for the construction of special apparatus and for the repair and maintenance of instruments.

The Chemistry Library, located in the building, has on its shelves over 18,500 volumes and currently subscribes to over 200 scientific periodicals.

PSYCHOLOGY LABORATORIES. Graduate work in psychology is carried on chiefly in three buildings on the East Campus providing about 20,000 square feet of floor space. Further facilities for psychology research and teaching are available in the laboratories and clinics at the Duke Medical Center. In addition to general research facilities, the Laboratories are specifically equipped for research in visual perception, small group behavior, human and animal learning, and in physiological psychology and neuropsychology. Special apparatus includes automatic computation equipment for research in test construction. A departmental shop, with a competent technician in charge, is maintained for the design, construction, and maintenance of special apparatus.

A number of clinical installations for adults and children, devoted to an extensive range of clinical and guidance problems, cooperate with the Department in providing additional facilities for research and training in clinical and counseling psychology. In addition, a nursery school is maintained in the laboratory.

An extensive collection of psychological journals and monographs is housed in a special psychology reading room in the Woman's College Library.

MEDICAL SCHOOL. In the School of Medicine elaborate facilities are provided for postgraduate research in the various branches of medical science. The Departments of Anatomy, Bacteriology, Mycology and Immunology, Biochemistry and Nutrition, and Physiology and Pharmacology offer certain courses and research facilities to students in the Graduate School of Arts and Sciences. The Duke Hospital Library is available to all graduate students.

ENGINEERING LABORATORIES. The College of Engineering Building is well equipped for research and instruction in the Departments of Civil, Electrical, and Mechanical Engineering. In addition to its own library and general resources, special facilities are provided for engineering graduate research in the several Departments, as follow—Civil Engineering: structural analysis, soil mechanics, materials of construction, and hydrodynamics; Electrical Engineering: dielectric materials, ferromagnetic materials, superconducting circuits, energy conversion, instrumentation, and high-voltage phenomena; Mechanical Engineering: heat transfer, environmental thermodynamics, vibration studies, and response of physical systems. These facilities are described in the *Bulletin of the College of Engineering.*

Duke Forest

The Duke Forest consists of approximately 7,200 acres of land, most of which is adjacent and easily accessible to the University campus. Situated in the lower Piedmont region and composed of second-growth shortleaf pine, loblolly pine, and hardwoods, the Forest is representative of the various types of timber growth and soils found throughout the region. Through placing the Forest under intensive management for forestry purposes, substantial progress has been made in developing the educational work and research in forestry.

The proximity of the Forest to the laboratories, greenhouses, and library facilities of the University provides an excellent opportunity for advanced study and research in forestry. Research, particularly in the fields of silvics, forest soils, silviculture, forest management, properties of wood, forest-tree physiology, forest entomology, and forest pathology, is well under way. Several members of the botany and zoology staffs are also engaged in research in the Duke Forest.

Commonwealth-Studies Center

Duke University, through a grant from the Carnegie Corporation in 1955, established a Studies Center to encourage and stimulate research by American and Commonwealth students and professors on economic, historical, and political problems of countries within the Commonwealth of Nations. During its initial stages the program has been centered on the "Old Commonwealth" (United Kingdom, Australia, New Zealand, Canada, and South Africa), although increased attention is being given to the newer Commonwealth countries in Africa and Asia.

During the first five years the Center's activities have been in several directions: (1) Faculty members from Duke have been assisted in research projects in Commonwealth countries. (2) A number of outstanding scholars were brought to Duke to deliver lectures which were later published in book or pamphlet form. (3) Visiting professors from the Commonwealth have come to Duke for varying periods of time. (4) Advanced graduate students from Duke were assisted in completing research work on Ph.D. dissertations in Commonwealth countries. (5) Students from the Commonwealth were awarded fellowships to Duke enabling them to complete work for the Ph.D. in economics, history, or political science. (6) Summer research groups have brought together for study at Duke qualified social scientists whose research interests relate to the Commonwealth.

Oak Ridge Institute of Nuclear Studies

Duke University is one of the sponsoring universities of the Oak Ridge Institute of Nuclear Studies located at Oak Ridge, Tennessee. Through this cooperative association with the Institute, the graduate research program has at its disposal all the facilities of the National Laboratories in Oak Ridge and of the research staffs of these laboratories.

Cooperative Programs with the Consolidated University of North Carolina

INTERCHANGE OF REGISTRATION. (See pp. 19-20.)

LIBRARY EXCHANGE. Students of both the University of North Carolina and Duke University are granted certain library privileges in the respective libraries of each University. Books unavailable in one library may be procured at short notice through an interlibrary loan service.

Research and Publication

The several departments of the University are devoted to research as well as to instruction. Since the University exists for the promotion and diffusion of knowledge, attention is rightly placed, in the Graduate School, on research activities.

In furtherance of the University's obligation to promote and diffuse knowledge, the President annually appoints a University Council on Research, which receives applications from members of the various faculties for subsidies in support of research. Vigorous and forward-looking policies of this Research Council have initiated and encouraged the completion of many substantial and important research projects.

The Duke University Press takes its place as a significant agency in the diffusion of knowledge. Created in 1925, as a successor to the Trinity College Press, the Duke University Press continued the publication of the *South Atlantic Quarterly,* published at Trinity College since 1902, and in 1926 revived the *Hispanic-American Historical Review,* which had been founded and published from 1918 to 1922 by a group of scholars interested in Hispanic America. In 1929 *American Literature* was begun with the cooperation of the American Literature Group of the Modern Language Association. This journal was followed in 1931 by *Ecological Monographs,* and in 1932, *Character and Personality* (since 1945 the *Journal of Personality*). In 1935 the Press began the publication of the *Duke Mathematical Journal;* in 1937, the

Journal of Parapsychology. Since 1948, it has published *Ecology,* the official journal of the Ecological Society of America. The Law School of Duke University publishes *Law and Contemporary Problems, The Duke Bar Journal,* and *The Journal of Legal Education.*

The Press, since is organization, has published more than three hundred volumes, including four series of monographs, and has thus made public the fruits of scholarly research of the Duke faculty and of scholars elsewhere. In the broadest sense, the policy of the Press is to make available to the public any scholarly work that merits publication though special attention is given to works in domains of knowledge cultivated by the University.

Visiting Scholars

The libraries and, to the extent practicable, other facilities of Duke University will be made available to faculty members of colleges and universities who wish to spend a period of time on the campus in pursuit of their scholarly interests. No fees will be charged such visitors unless they wish to participate in activities for which a special fee is assessed. Room and board may be arranged for at the regular rates in the dormitories and dining halls. Dormitory space is usually available during the summer months. Inquiries concerning residence for visiting scholars should be directed to the Dean of the Graduate School of Arts and Sciences.

Graduate Study in the Summer Session

The Summer Session of Duke University is divided into two terms. In 1960 the first term will begin on June 10 and will end on July 15 The second term will begin on July 16 and will end on August 20.

Graduate students who wish to work toward advanced degrees in the Summer Session, particularly in chemistry, economics, education, English, history, mathematics, religion, sociology, Spanish, and zoology, will find a selection of courses offered by members of the Duke faculty and by visiting professors. Other departments ordinarily offering work leading to the A.M. degree are botany, political science, and psychology. Thesis research for advanced graduate students is available also in other departments, such as botany, forestry, and physics.

Requirements for admission to the Graduate School are detailed above. Students who wish to be admitted to the Graduate School for work in the Summer Session should make application to the Dean of the Graduate School, as well as to the Director of the Summer Session, and should return the completed application, with supporting documents, before May 10, for admission to the first term, and before June 16, for admission to the second term.

REGULATIONS REGARDING SUMMER WORK. (a) No graduate student may register for more than six units of credit in one Summer Session term. (b) All of the work required for the A.M., M.A.T., or M.Ed. degree must be completed within six years of the date of beginning. (c) Not more than one year of summer work can be accepted toward the residence requirements beyond the minimum for the Ph.D. or Ed.D. degrees. See p. 31 for a definition of a year's residence credit earned in Summer Sessions. Students who complete in a summer session the work required by the University for the Master's degree will be granted the degree at the end of the summer.

A Summer Session Bulletin containing information about graduate courses may be obtained by addressing a request to the Director of the Summer Session, Duke University, Durham, N. C.

Courses of Instruction

Condensed List

(For full course descriptions including credit and name of instructor see the complete *Bulletin*.)

(Courses offered annually bear no date; those offered only when the demand warrants bear an asterisk.)

AESTHETICS, ART, AND MUSIC

PROFESSOR PATRICK, CHAIRMAN; ASSOCIATE PROFESSORS HALL, MARKMAN, AND SUNDERLAND

AESTHETICS

FOR SENIORS AND GRADUATES

No graduate degree is offered in this department, but the following courses are suggested as possible minors for students majoring in history, literature, philosophy, religion, psychology, or sociology, or in any other interested departments.

221-222. History of Aesthetics. (Not 1960-61)

ART

215. Religious Art of the Ancient Near East.*
216. Religious Art of the Classical World.*
217. Aegean Art. (1960-61)
218. Early Greek Art. (1960-61)
233. Early Mediaeval Architecture.*
234. Romanesque Sculpture.*
240. Architecture of North America. (1960-61)

ANATOMY

PROFESSOR J. E. MARKEE, DIRECTOR OF GRADUATE STUDIES—405 MEDICAL SCHOOL; PROFESSORS EVERETT AND HETHERINGTON; ASSOCIATE PROFESSORS BECKER, DUKE, MOSES, AND PEELE.

(See MEDICAL SCHOOL, p. 66)

M201. Anatomy as Related to Locomotion
M202. Microscopic Anatomy
M203. Anatomy of the Nervous System
M204. Neuroanatomical Basis of Behavior
M205. Anatomy of the Viscera
M301. Gross Human Anatomy
M312. Research
M313-314. Anatomy Seminar

DIVISION OF ANCIENT LANGUAGES AND LITERATURE

PROFESSORS CLARK, ROGERS, STINESPRING, AND TRUESDALE; ASSOCIATE PROFESSOR WAY

GREEK

No graduate degree is offered in Greek.

201-202. Greek Tragedy*
257. Social and Cultural History of the Hellenistic World from Alexander to Augustus

LATIN AND ROMAN STUDIES

No graduate degree is offered in Latin.

211-212. Roman Oratory
258. Social and Cultural History of the Graeco-Roman World

SEMITICS

201-202. First Hebrew
207-208. Second Hebrew
304. Aramaic
305. Third Hebrew (Not 1960-61)
307. Syriac (1960-61)
309. History of the Ancient Near East (Not 1960-61)

BIOCHEMISTRY AND NUTRITION

PROFESSOR PHILIP HANDLER, DIRECTOR OF GRADUATE STUDIES—237 BELL BUILDING; ASSISTANT PROFESSORS BYRNE, DAVIDSON, AND KAMIN; DRS. FRIDOVICK, GREEN, KIRSHNER, LYNN, AND WHEAT

(See MEDICAL SCHOOL, p. 66)

M241. General Biochemistry and Nutrition
M243-244. General Biochemistry
M246. Laboratory Methods in Biochemistry
M310. Microbial Physiology
M343-344. Biochemistry of Proteins and Enzymes
M345-346. Seminar
M349-350. Intermediary Metabolism
M351. Nutrition (Not 1960-61)
M354. Biochemistry of Disease (Not 1960-61)

BOTANY

PROFESSOR OOSTING, CHAIRMAN—102A BIOLOGY BUILDING; PROFESSOR KRAMER, DIRECTOR OF GRADUATE STUDIES—04 BIOLOGY BUILDING; PROFESSORS ANDERSON, BILLINGS, HARRAR AND NAYLOR; ASSOCIATE PROFESSORS HUMM, PERRY, AND PHILPOTT; ASSISTANT PROFESSORS CULBERSON, JOHNSON, AND WILBUR

Graduate work in the Department of Botany is offered leading to the A.M. and Ph.D. degrees. Before undertaking graduate study in botany a student should have had in his undergraduate program at least 12 semester hours of botany beyond an elementary course, and related work in biological sciences. Some work in chemistry and physics will be desirable and, for some phases of botanical study, a necessity. The student's graduate program is planned to provide a broad basic training in the various fields of botany, plus intensive specialization in the field of the research problem.

202. Genetics (1960-61)
203. Plant Cytology (1960-61)
204. Advanced Plant Anatomy (Not 1960-61)
216. Botanical Microtechnique (1960-61)
218. Illustrative Techniques (Not 1960-61)
221. Introductory Mycology
225-226. Special Problems
252. Plant Metabolism
254. Plant Water Relations
255. Advanced Taxonomy
256. Community Analysis and Classification (1960-61)
257. Principles of Plant Distribution (Not 1960-61)
258. Physiology of Growth and Development
259. Environmental Measurements (1960-61)
305. Vegetation of North America (Not 1960-61)
310. Bryophytes (1960-61)
311. Algae (1960-61)
359-360. Research in Botany
397-398. General Botanical Seminar

FOREST BOTANY

228. Forest Pathology
253. Dendrology

MARINE LABORATORY

Three marine botany courses are given in the Duke University Marine Laboratory, Beaufort, N. C., one each summer in sequence: S205, Marine Microbiology; S207. Marine Mycology; S211, Marine Algae.

CHEMISTRY

PROFESSOR SAYLOR, CHAIRMAN—115 CHEMISTRY BUILDING, PROFESSOR BRADSHER, DIRECTOR OF GRADUATE STUDIES—124 CHEMISTRY BUILDING; PROFESSORS BIGELOW, BROWN, GLOCKLER (VISITING LECTURER), GROSS, HAUSER, HILL, AND HOBBS. ASSOCIATE PROFESSORS KRIGBAUM, STROBEL, AND WILDER; ASSISTANT PROFESSORS POIRIER, QUIN, AND SMITH.

In the Department of Chemistry graduate work is offered leading to the A.M. and Ph.D. degrees. Before undertaking a graduate program in chemistry, a student should have taken an undergraduate major in chemistry along with related work in mathematics and physics.

Graduate courses in the department are designed to provide a broad basic training in the fields of inorganic, organic, analytical, and physical chemistry. An important requirement for the Ph.D. degree is the successful completion, under the direction of a member of the staff, of a research program leading to the solution of an original problem. The choice of the research problem, for either the A.M. or the Ph.D. degree, will determine the field of advanced specialization.

206. Elements of Theoretical Chemistry
215. Advanced Inorganic Chemistry
216. Nuclear Chemistry (1960-61)
234. Chemical Instrumentation
251. Qualitative Organic Analysis
252. Advanced Organic Preparations
261-262. Physical Chemistry
271. Introduction to Research
275, 276. Research
303. Thermodynamics
304. Physical Chemistry of Reactions
331, 332. Seminar in Analytical and Inorganic Chemistry*
341, 342. Advanced Organic Chemistry
350. Organic Reactions (1960-61)
351-352. Advanced Synthetic Organic Chemistry
354. Stereochemistry (Not 1960-61)
360. Polymer Chemistry
363, 364. Special Topics in Physical Chemistry (1960-61)
365-366. Chemical Physics, Statistical Theory (365, Not 1960-61; 366, Fall 1960-61)
367, 368. Chemical Physics, Quantum Theory (367, Spring 1960-61; 368, Not 1960-61)
373, 374. Seminar

COMPARATIVE LITERATURE

No graduate degree is offered in Comparative Literature. The following courses may serve in the minor programs of students in other departments. Consult Professor Salinger, Chairman of the Department of German.

201, 202. Romanticism (1960-61)
203, 204. Realism and Symbolism (Not 1960-61)

ECONOMICS

PROFESSOR DE VYVER, CHAIRMAN—203 SOCIAL SCIENCE; PROFESSOR SPENGLER, DIRECTOR OF GRADUATE STUDIES—322 LIBRARY; PROFESSORS BLACK, CARTTER, HANNA, HOOVER, HUMPHREY, LANDON, RATCHFORD, SIMMONS, AND SMITH; ASSOCIATE PROFESSOR DEWEY; ASSISTANT PROFESSORS FERGUSON AND YOHE

Graduate work in the Department of Economics is offered leading to the A.M. and Ph.D. degrees. To enter upon graduate work in economics a student should have completed with satisfactory grades at least 12 semester hours of undergraduate work in economics, including 6 hours of Principles of Economics. Among the undergraduate courses of distinct advantage to the graduate student specializing in economics are: General Accounting, Elementary Statistics, Intermediate Economic Theory, and basic courses in philosophy, psychology, the social sciences other than economics, and mathematics.

The fields from among which students working toward a Ph.D. degree in economics may choose for purposes of concentration are: Economic Theory, History of Economic Thought, Demographic and Economic Growth and Change, Economic History, Economic Systems, Industrial and Organizational Economics, International Trade, Labor Economics, Mathematical and Econometrical Economics, Money and

Banking, Public Finance, Statistics and National Income, and (occasionally) especially arranged fields. The requirements for the Ph.D. degree in economics normally include (among other things) completion of the work (or its equivalent) making up the first of these fields, together with four additional fields; courses in several other fields; Economics 237-238, or equivalent work; and two or three courses in minor fields. When circumstances warrant, these requirements are subject to modification. Students electing Statistics and National Income as a field must complete courses in mathematical statistics and probability, or equivalents.

233. State and Local Finance*
237-238. Statistical Methods
240. National Income (1960-61)
243. Mathematical Economics
244. Introduction to Econometrics
256. Labor Legislation and Social Insurance (1961-62)
262. Trade Unionism and Collective Bargaining (1960-61)
275-276. Advanced Industrial Accounting and Management
300. Introductory Mathematical Economics
301. Economic Analysis
304, 305. Seminar—Money and Banking (1961-62)
311-312. History of Political Economy (1961-62)
313-314. Seminar—Economic Theory
315. Seminar—Economic Systems (1960-61)
316. Seminar—Economic Functions of the State (1960-61)
317. Seminar—Demographic, Population, and Resource Problems (1960-61)
318. General Seminar in Economics
319. Seminar—Theory and the Problems of Economic Growth and Change
320. Seminar—Trade Cycles, Employment, and Income Theory
321-322. Economic Workshop—Economic Development.
329. Federal Finance (1960-61)
330. Seminar—Public Finance (1960-61)
331. Seminar—Economic History (1960-61)
355. Seminar—Labor Economics (1960-61)
358. Seminar—Labor Market and Related Analysis (1961-62)
365. Seminar—International Trade (1960-61)
386. Seminar—Latin-American Economic Problems (1960-61)
389. Seminar—Industrial and Governmental Problems (1960-61)
401. Seminar—British Commonwealth

EDUCATION

PROFESSOR CARTWRIGHT, CHAIRMAN—08D WEST DUKE BUILDING; PROFESSOR BOLMEIER, DIRECTOR OF GRADUATE STUDIES—08B WEST DUKE BUILDING; PROFESSORS CARR AND HURLBURT; ASSOCIATE PROFESSORS COLVER, GEHMAN, PETTY, RUDISILL, STUMPF, AND WEITZ; ASSISTANT PROFESSOR DUNNING

Graduate work in Education is offered leading to the A.M., the M.Ed., the M.A.T., and the Ed.D. degrees. For each of these degrees there are specific requirements and prerequisites, all of which may be found stated in detail in this *Bulletin*, pp. 25-34. Departmental requirements and prerequisites for all of these degrees may be obtained from the Director of Graduate Studies.

(Some courses below are offered only in the Summer Session; see the Summer Session *Bulletin*.)

201. Teaching and Supervision of Arithmetic
203. Principles of School Administration
204. The School as an Institution
205. Curriculum Problems in Secondary Education*
210. Introduction to Educational Research
213. Elementary School Organization and Administration*
215. Secondary Education: Principles
216. Secondary Education: Internship
217. The Psychological Principles of Education
222. The Curriculum and Materials of the Elementary Grades*
224. Teaching the Social Studies in Elementary Schools
225. The Teaching of History and the Social Studies
226. Teaching Reading in the Elementary School
228. Improvement of Instruction in the Social Studies
232. Supervision of Instruction*
234. Secondary School Organization and Administration

235. The Nature, Function, and Reorganization of the Curriculum
236. Teaching Reading in the Secondary School
237. Literature for Adolescents
239. Methods and Problems of Teaching English in Secondary Schools
240. Educational and Occupational Information*
241. Principles of Guidance
242. Measurement of Aptitudes, Interest, and Achievement
243. Personality Dynamics
244. Counseling Techniques
246. The Teaching of Mathematics
248. Practicum in Counseling
253. School Law
258. Educational Measurements
266. Science in the Elementary School*
276. The Teaching of High School Science
290. Administration of School Property*
315. Seminar—Secondary School Teaching
323. Public School Finance*
335-336. Seminar in School Administration
354. Seminar in School Law

ENGINEERING

CIVIL ENGINEERING

PROFESSOR ROWE, CHAIRMAN AND DIRECTOR OF GRADUATE STUDIES—121 ENGINEERING; PROFESSOR WILLIAMS; ASSOCIATE PROFESSOR GARDNER

The Department of Civil Engineering offers graduate work leading to the Master of Science degree. A broad approach is emphasized and fundamental principles are stressed. Narrowly specialized courses are not offered. Each graduate student therefore engages in a program that is designed to give him technical competence in mathematics, physics, or chemistry, and the civil engineering sciences. A student may concentrate on one of the following fields of civil engineering: hydraulic engineering, soils engineering, or structural engineering.

A minimum prerequisite to the graduate program will be mathematics through linear differential equations, mechanics of materials, structural theory and design, fluid mechanics, and location procedure.

CE 201. Theoretical and Applied Mechanics
CE 202. Advanced Mechanics of Materials and Experimental Stress Analysis
CE 231. Structural Theory and Analysis
CE 232. Reinforced Concrete Theory
CE 235. Foundation Engineering
CE 242. Hydraulic Engineering
CE 297-298, Thesis Research

ELECTRICAL ENGINEERING

PROFESSOR VAIL, CHAIRMAN AND DIRECTOR OF GRADUATE STUDIES—131 ENGINEERING; PROFESSOR MEIER; ASSOCIATE PROFESSORS ARTLEY, OWEN, AND WILSON

The Department of Electrical Engineering offers graduate work leading to the degree of Master of Science. Students may specialize in any of the following fields: dielectric materials; ferromagnetic materials; energy conversion; instrumentation; high voltage phenomena. The major requirement of 12 units in electrical engineering is normally met by taking courses EE 201 and EE 202, plus two other courses which are so selected as to provide background for the specialized thesis research. The minor requirement of 12 units outside of engineering is normally met by Mathematics 285, 286 and Physics 213, 214.

A minimum prerequisite to the graduate courses in electrical engineering is a basic knowledge of differential equations, electric and magnetic field theory, and the theory of networks.

EE 201. Energy Systems
EE 202. Information Systems
EE 211. Solid State Engineering
EE222. Nonlinear Electromagnetics
EE 231. Nuclear Engineering
EE 259. Advanced Electrical Energy Conversion
EE 265. Advanced Topics in Communications
EE 297, 298. Thesis Research

MECHANICAL ENGINEERING

PROFESSOR MACDUFF, CHAIRMAN AND DIRECTOR OF GRADUATE STUDIES—142A ENGINEERING; PROFESSOR KENYON; ASSOCIATE PROFESSORS ELSEVIER, STEVENSON, AND BOYLE

The Mechanical Engineering Department offers graduate work leading to the degree of Master of Science. It is intended that the work for this degree provide a broad basic foundation in the art of applying science to Mechanical Engineering design and analysis. The major requirement of 12 units in Mechanical Engineering is normally met by taking courses ME 201 and ME 202, plus two other courses which are so selected as to provide background for the specialized thesis-research. The minor requirements of 12 outside the College of Engineering is normally met by Mathematics 285, 286, and Physics 213, 214.

A minimum prerequisite to the graduate courses in mechanical engineering is a basic knowledge of differential equations, undergraduate thermodynamic theory, kinematics, mechanics, and machine design.

ME 201. Theoretical and Applied Mechanics
ME 202. Theoretical Thermodynamics
ME 221. Analysis of Incompressible and Compressible Fluid Flow*
ME 222. Analysis of Heat Transfer*
ME 231-232. Systems Engineering
ME 280. Nuclear Reactor Power Cycles*
ME 297, 298. Thesis Research

ENGLISH

PROFESSOR TURNER, CHAIRMAN—325 ALLEN BUILDING; PROFESSOR BOYCE, DIRECTOR OF GRADUATE STUDIES—401 ALLEN BUILDING; PROFESSORS BEVINGTON, BRINKLEY, FENTON, FISHER, GOHDES, SANDERS, STEVENSON, AND WARD; ASSOCIATE PROFESSOR BRYANT; ASSISTANT PROFESSORS BUDD, FERGUSON, HENINGER AND SMITH

The department offers graduate work leading to the A.M. and Ph.D. degrees. A statement of the requirements for the Ph.D. degree may be obtained from the Director of Graduate Studies.

203. Chaucer
207-208. History of the English Language
215, 216. Elizabethan Drama
217. Milton (1960-61)
218. Spenser (Not 1960-61)
219, 220. The Eighteenth Century
221, 222. English Literature of the Early Nineteenth Century
223, 224. English Literature of the Later Nineteenth Century
229, 230. American Literature, 1800-1865
233, 234. American Literature, 1865-1920
235, 236. American Literature since 1920
237. English Drama, 1642-1800 (Not 1960-61)
239. Shakespeare
251, 252. English Literature of the Seventeenth Century
262. English Literature of the Early Twentieth Century (1960-61)
269, 270. Southern Literature (Not 1960-61)
274. American Humor (Not 1960-61)
304. Studies in the Metaphysical Poets (Not 1960-61)
311. Beowulf (Not 1960-61)
315. Fourteenth-Century English Literature (1960-61)
316. Fifteenth-Century English Literature (Not 1960-61)
331. Emerson (1960-61)
332. Whitman (Not 1960-61)
333. Hawthorne and Melville (1960-61)
345. The Eighteenth Century Novel (1960-61)
347. Studies in Victorian Poetry (Not (1960-61)
348. Studies in Victorian Fiction (Not 1960-61)
351, 352. Introduction to Research
378. Seminar—Samuel Johnson's Literary Criticism and Related Topics (Not 1960-61)

FORESTRY

PROFESSOR HARRAR, CHAIRMAN AND DIRECTOR OF GRADUATE STUDIES—308 SOCIAL SCIENCE BUILDING; PROFESSORS ANDERSON, KRAMER, NAYLOR, AND SCHUMACHER; ASSOCIATE PROFESSORS RALSTON AND YOHO; ASSISTANT PROFESSORS JOHNSON, AND WOODS

Major and minor work is offered in the scientific aspects of forestry leading to the Master of Arts and Doctor of Philosophy degrees. Work for these degrees may

be pursued only in forest-tree physiology, wood anatomy and properties, forest pathology, silvics, forest soils, forest mensuration, forest entomology, and forest economics. College graduates who have had specialized training in botany or soil science and in allied basic subjects, such as physics, chemistry, geology, and zoology, may pursue graduate study and research only in the specialized fields for which their previous work has qualified them. Students who do not have previous training in forestry will be required to complete a minimum of thirty semester hours of approved work in forestry as a preliminary requirement to advanced study for the A.M. and Ph.D. degrees. The holders of these degrees will not be regarded as professionally trained foresters. For information on professional training in forestry, see *Bulletin of the School of Forestry.*

223. Forest Pathology
231. Forest Entomology
241. Dendrology
243. Silvics
251. Sampling Methods in Forestry
257. Design of Forestry Experiments and Analysis of Data
261. Forest Soils
271. Economics of Forestry
276. Forestry Policy
290. Wood Anatomy
352. Analysis of Forest Measurement
357, 358. Research in Forestry
362. Forest Soil Physics (1960-61)
366. Forest Soil Fertility (Not 1960-61)
378. Seminar—Forest Economics
396. Chemistry of Wood
397. Timber Physics

GERMANIC LANGUAGES AND LITERATURE

PROFESSOR SALINGER, CHAIRMAN AND DIRECTOR OF GRADUATE STUDIES—301C GRAY; ASSOCIATE PROFESSOR SCHOOLFIELD; ASSISTANT PROFESSOR BEARE

The Department of German offers graduate work leading to the A.M. degree. Students who expect to major in German should have had sufficient undergraduate courses in Germanic languages to enable them to proceed to more advanced work.

Students who wish to take courses in German for a minor should normally have completed a third-year course (in exceptional cases, a second-year) of college German with acceptable grades.

201, 202. Goethe (1960-61)
203, 204. Eighteenth Century*
205, 206. Middle High German*
207, 208. German Romanticism (Not 1960-61)
209, 210. Kleist, Grillparzer, and Hebbel (Not 1960-61)
211, 212. Heinrich Heine (Not 1960-61)
213. Literature of the Empires, 1866-1918 (1960-61)
214. German Literature since 1918.
215. Seventeenth-Century Literature
——. Graduate Reading Course

HISTORY

PROFESSOR ALDEN, CHAIRMAN—235 ALLEN; PROFESSOR PARKER, DIRECTOR OF GRADUATE STUDIES—232 ALLEN; PROFESSORS CLYDE, CURTISS, HAMILTON, LANNING, MANCHESTER, ROPP, AND WOODY; ASSOCIATE PROFESSORS ACOMB, COLTON, FERGUSON, HOLLEY, NELSON, AND WATSON; ASSISTANT PROFESSOR DURDEN

A student who intends to work for an A.M. degree in history must present a total of eighteen semester hours of credit for undergraduate courses in history, of which six hours must be in American history if he plans to take his major in that field.

A candidate for the degree of Doctor of Philosophy in history is required to prepare himself in four fields of history, one of which must be in American history and another in the history of Western Europe. The choice and delimitation of fields is determined in consulation with his supervisor and the Director of Graduate Studies. The Department offers graduate instruction in the following fields: Western Europe; American history; Great Britain and the Commonwealth; Latin America; American foreign relations; the Far East in the modern period; Russia; military history.

Students may receive credit for either semester of a hyphenated course without taking the other semester if they obtain written permission from the instructor and the Director of Graduate Studies.

203-204. The United States, 1850-1900 (Not 1960-61)
209-210. Constitutional History of the United States, 1760 to the Present
212. Recent Interpretations of United States History
213-214. The Old South (Not 1960-61)
215-216. Foreign Policy and Diplomacy of the United States (Not 1960-61)
217, 218. Europe Since 1870
221-222. The Age of the Renaissance (1960-61)
223-224. The Old Regime and the French Revolution, 1661-1815
225-226. The Age of the Reformation (Not 1960-61)
227, 228. Europe in the Nineteenth Century (Not 1960-61)
229. Recent Interpretations of Modern European History
231-232. The Hispanic Colonies and Republics in America (1960-61)
233-234. The Institutional, Culture, and Social History of Hispanic America (Not 1960-61)
235, 236. European Expansion Overseas
241-242. The Far East
243-244. The United States and the Far East.
245-246. War in the Modern World
249-250. Social and Intellectual History of the United States
251-252. Recent European History
257. Social and Cultural History of the Hellenistic World from Alexander to Augustus
258. Social and Cultural History of the Graeco-Roman World
259-260. The Emergence of the New South, 1865 to the Present
261-262. Russia in the Twentieth Century
263-264. American Colonial History and the Revolution, 1607-1789
267, 268. England from Edward III to Anne
269. British History from 1714 to 1867
270. Great Britain and the Commonwealth of Nations, 1867 to the Present
303-304. The United States in the Twentieth Century
305-306. Seminar—History of England and the British Empire
309-310. Seminar—American Colonial and Revolutionary History
315-316. Seminar—Southern History (Not 1960-61)
317-318. Seminar—Modern European History
321-322. Seminar—History of Spain, Hispanic America, and Inter-American Relations
343-344. Seminar—History of American Foreign Relations and the Far East
312. Seminar—The Teaching of History in College
320. Historiography
401. Seminar on the British Commonwealth

MATHEMATICS

PROFESSOR GERGEN, CHAIRMAN—134 PHYSICS BUILDING; PROFESSOR ROBERTS, DIRECTOR OF GRADUATE STUDIES—230 PHYSICS BUILDING; PROFESSORS CARLITZ, DRESSEL, ELLIOTT, AND THOMAS; VISITING PROFESSOR SNEDDON; ASSISTANT PROFESSORS GALLIE, MCLEOD, SHOENFIELD, AND WARNER; VISITING ASSISTANT PROFESSOR SCHMIDT

Graduate work in the Department of Mathematics is offered leading to the A.M. and Ph.D. degrees. The student, in his undergraduate work, must have had courses in differential and integral calculus, and at least 6 semester hours of other courses in mathematics on the junior or senior level.

The A.M. degree with a major in mathematics is awarded primarily on the basis of scholarship. Of the 24 units of course work required for this degree, 18 units must be taken in the Department of Mathematics.

The Ph.D. degree in mathematics is awarded upon the demonstration of ability and training in research. The original dissertation, therefore, becomes the most important of the formal requirements for this degree.

Because of the important literature of mathematics written in German and French, the student must have a practical reading knowledge of these languages near the beginning of his graduate study.

205. Algebra from an Advanced Standpoint (Retired Officers Program)
206. Plane Geometry and Trigonometry from an Advanced Standpoint (Retired Officers Program)
211. Finite Mathematics (Retired Officers Program)
212. Mathematical Analysis (Retired Officers Program)
213-214. Modern Algebra

221. Digital Computer
222. Introduction to Numerical Analysis
227-228. Theory of Numbers (1960-61)
229-230. Algebraic Numbers (Not 1960-61)
235-236. Abstract Algebra
247-248. Arithmetic of Polynomials*
253-254. Differential Geometry*
271-272. Introductory Topology
285. Mathematical Analysis for Chemists and Physicists
286. Mathematical Analysis for Chemists and Physicists
287-288. Foundations of Mathematics (Not 1960-61)
291-292. Theory of Functions
325-326. Real Variable (1960-61)
327-328. Partial Differential Equations*
333-334. Analytic Theory of Numbers*
337-338. Existence Theorems*
343-344. Ordinary Differential Equations*
371-372. Dimension Theory*
395-396. Topological Algebra (1960-61)

MICROBIOLOGY

PROFESSOR NORMAN F. CONANT, DIRECTOR OF GRADUATE STUDIES—321 BELL BUILDING; PROFESSORS BEARD, LARSH AND D. T. SMITH; ASSOCIATE PROFESSORS OVERMAN, RUNDLES, WILLETT; ASSISTANT PROFESSOR PINE

(See MEDICAL SCHOOL, p. 66)

M221. Bacteriology and Immunology
M323. Advanced Bacteriology and Immunology
M324. Research Seminar on Viruses
M325. Medical Mycology
M291. Medical Parasitology
M211. Hematology
M326-327. Seminar

PHILOSOPHY

PROFESSOR BAYLIS, CHAIRMAN—212B WEST DUKE BUILDING; ASSOCIATE PROFESSOR PEACH, DIRECTOR OF GRADUATE STUDIES—212A WEST DUKE BUILDING; PROFESSOR NEGLEY; ASSOCIATE PROFESSORS WELSH AND CLARK; ASSISTANT PROFESSOR WILSON

The Department of Philosophy offers graduate work leading to the A.M. and Ph.D. degrees. Students may specialize in any of the following fields: the History of Philosophy; Logic; Philosophy of Science; Epistemology; Metaphysics; Philosophical Analysis; Ethics; Aesthetics; Political Philosophy; and Philosophy of Law. Applicants for admission should offer scores of The Graduate Record Examination or The Miller Analogies Test.

Individual programs of study are developed for each student. The following requirements, however, are fundamental: (1) In February of their first year new graduate students in philosophy who are not then taking the preliminary examinations for the Ph.D. are required to take qualifying examinations in the history of philosophy, ancient and modern, on a central philosophical topic, and logic, both classical and symbolic, unless they have taken and passed with a grade of E or G Phil 331c, Logic, in their first semester. A student's achievement on these examinations will be regarded as indicative of his ability to undertake advanced graduate work. (2) Preliminary examinations for the Ph.D., which may be taken only after a student has met the language requirements for that degree, should be passed during the first year of study beyond the A.M. degree. In these examinations students are expected to combine historical knowledge with critical understanding.

Work in a minor field outside of the Department, but not necessarily confined to any one department, must include six units for the A.M. and nine for the Ph.D. and may include more as a student's program requires or permits.

202. Philosophy of Art
203. Contemporary Ethical Theories (Not 1960-61)
205. Philosophy of History
208. Political Philosophy
211. Plato*
217. Aristotle (1960-61)
219. Kant*
225. British Empiricism (Not 1960-61)
227. Continental Rationalism (1960-61)
228. Recent and Contemporary Philosophy
229. American Pragmatism*
232. Special Problems in the Philosophy of Science (1960-61)
241. Logic (Not 1960-61)
250. Philosophical Analysis (1960-61)
252. Metaphysics (Not 1960-61)

287-288. Foundations of Mathematics
291, 292. Critical Philosophy
331, 332. Seminar in Special Fields of Philosophy

PHYSICS

PROFESSOR NIELSEN, CHAIRMAN—119 PHYSICS BUILDING; PROFESSOR LEWIS, DIRECTOR OF GRADUATE STUDIES—043 PHYSICS BUILDING; PROFESSORS GORDY, NEWSON, AND SPONER; ASSOCIATE PROFESSORS BLOCK, GREULING, AND WILLIAMSON; ASSISTANT PROFESSOR MEYER; VISITING ASSISTANT PROFESSORS DUNCAN AND ROBL

The Department of Physics offers graduate work leading to the A.M. and Ph.D. degrees. Course work is designed to give a broad basic foundation in classical and modern physics. All graduate students will be expected to acquire a thorough knowledge of the various branches of classical physics and some familiarity with modern physics and with basic laboratory skills. They will be required to take such course work in the 200-number courses as may be necessary to obtain this foundation.

The student will be required to take such course work as will best be adapted to the kind of work he will subsequently specialize in and to the kind of research he will undertake. The choice of minor will be similarly determined.

Since a practical reading knowledge of French and German is highly desirable for the student of physics, he should satisfy these language requirements as early as possible.

201, 202. Mechanics
213, 214. Contemporary Physics
217, 218. Advanced Physics Laboratory
219. Electricity and Magnetism
220. Advanced Electronics
303, 304. Thermodynamics, Statistical Mechanics (1960-61)
306. Low Temperature Physics (Not 1960-61)
309. Solid State (1960-61)
315-316. Principles of Quantum Theory (Not 1960-61)
318-319. Electromagnetic Field Theory (Not 1960-61)
320. Theory of Electrons*
323. Theory of Atomic Spectra (1960-61)
324. Theory of Molecular Spectra (1960-61)
331. Microwave Radiation (1960-61)
335. Microwave Spectroscopy (Not 1960-61)
340. Structure of Matter*
341. Advanced Topics in Quantum Theory (1960-61)
343. Nuclear Physics (1960-61)
344. Advanced Nuclear Physics (Not 1960-61)
345. High Energy Nuclear Physics (Not 1960-61)
351, 352. Seminar.

PHYSIOLOGY AND PHARMACOLOGY

PROFESSOR F. G. HALL, DIRECTOR OF GRADUATE STUDIES—203 MEDICAL SCHOOL; PROFESSORS F. BERNHEIM, EADIE; ASSOCIATE PROFESSOR HULL; ASSISTANT PROFESSORS KOSTYO AND LONG

(See MEDICAL SCHOOL, p. 66)

M203. Human Physiology
M261-262. Human Physiology
M365. Respiration and Aero-Physiology
M369. Pharmacology, Mode of Action of Drugs
M370. Seminar
M372. Research

POLITICAL SCIENCE

PROFESSOR RANKIN, CHAIRMAN—308 LIBRARY; PROFESSOR WILSON, DIRECTOR OF GRADUATE STUDIES—405 LIBRARY; PROFESSORS BRAIBANTI, COLE, CONNERY, AND HALLOWELL; ASSOCIATE PROFESSOR SINDLER; ASSISTANT PROFESSOR PROCTOR; VISITING PROFESSORS PARTRIDGE AND MAYO; VISITING ASSOCIATE PROFESSOR WEBB

The Department of Political Science offers graduate work leading to the A.M. and Ph.D. degrees. Before being admitted to candidacy for the Ph.D. degree, an applicant is normally expected to have qualified for the A.M. degree.

Instruction is designed to prepare the student for teaching, for government service, and for other work related to public affairs. Before undertaking graduate study in political science, a student is ordinarily expected to have completed at least 12 semester hours of course work in political science, including some work in American government.

Fields of political science in which instruction is at present offered for candidates for the degree of Doctor of Philosophy are the following; American Government and Constitutional Law; Comparative Government (with special reference to European Institutions, Far Eastern Institutions, or Commonwealth Institutions); Political Theory; American State and Local Government; International Law and Organization; Public Administration. Candidates for the degree of Doctor of Philosophy who propose to major in political science must elect five fields, including Comparative Government and Political Theory; at least one of the five fields must be taken in a department other than the Department of Political Science.

207. American Constitutional Law and Theory
209. Problems in State and Local Government in the United States
211. Political Institutions of the Far East
212. International Politics of the Far East
221. International Public Organization
223. Political Thought to the Seventeenth Century
224. Modern Political Theory
225, 226. Comparative Government and Politics
227-228. International Law
229. Recent and Contemporary Political Theory
230. American Political Institutions
231. American Political Theory
234. Civil-Military Relationships in American Government*
235. The British Commonwealth
241. Administrative Management
242. National Administration
246. Government Administration and Public Policy
275. The National Party System
276. Comparative State Parties and Politics
291. Problems of Municipal Government
292. Municipal Administration
301-302. Departmental Graduate Seminar
310. Seminar—State Government
311. Seminar—Far Eastern Politics
321, 322. Seminar—Political Theory
325, 326. Seminar—Comparative Government
327, 328. Seminar—International Law
341. Seminar—Public Administration
401. Seminar on the British Commonwealth

PSYCHOLOGY

PROFESSOR RODNICK, CHAIRMAN—106 BIVINS HALL; PROFESSOR ZENER, DIRECTOR OF GRADUATE STUDIES—205 PSYCHOLOGICAL LABORATORY; PROFESSORS ADAMS, COHEN, DAI, KIMBLE, KOCH AND KUDER; ASSOCIATE PROFESSORS BANHAM, DIAMOND, GARMEZY, GUTTMAN, AND JONES; ASSISTANT RESEARCH PROFESSOR GAFFRON; ASSISTANT PROFESSORS BONEAU, BORSTELMANN, BREHM, DASTON, FARINA, LAKIN, OBRIST AND SPEILBERGER; LECTURER GEHMAN

The Department offers training leading to the A.M. and Ph.D. degrees, with specialization in a number of areas. Training for the Ph.D. is offered in general experimental and physiological, social, clinical and counseling psychology. A program of studies leading to the A.M. degree is offered in all areas except clinical and counseling psychology.

Whatever the field of psychology in which a student eventually specializes, he is required to have a thorough background in the facts, methods, and theories of general psychology. Graduate programs are arranged to achieve this common background primarily during the first year, with specialization in course work and research in subsequent years.

Normally the candidate for the Ph.D. degree is expected, early in his second year of residence, to formulate his further program of advanced studies, and by the end of his second year to have passed his language examinations, a departmental qualifying examination in his areas of intended doctoral research, and the preliminary examination. By this time also his doctoral dissertation subject should have been formulated. Emphasis is laid upon the completion of the dissertation,

directed by a member of the staff, demonstrating competence and independence in the investigation of an original and significant problem.

As an integral part of their academic work during the first, second, and final year of residence, students specializing in clinical or counseling psychology will undertake field work in a variety of clinical settings. In addition, one year will be spent in an appropriate, approved internship, and a final year in residence at Duke University during which the dissertation should be completed.

The field of minor work is not restricted, but it may be pointed out that the fields most relevant to graduate study in psychology are zoology, philosophy of science, sociology and anthropology, physiology, neuroanatomy, mathematics, and education.

Further details concerning the program of studies in psychology may be obtained from the Director of Graduate Studies in Psychology.

201, 202. Proseminar
205. Sensory Discrimination
209. Experimental Methods in Psychology
212. Physiological Psychology
215. Developmental Psychology
221-222. Propracticum
236. Theoretical Psychology
242. Measurement of Aptitudes, Interest, and Achievement
265. Fundamental Statistical Applications in Psychological Research
266. Advanced Statistical Applications in Psychological Research
271. Selected Problems
303-304. Research
305. Psychopathology
306. Seminar—Developmental Psychology
308. Seminar—Psychopathology and Personality Theory
309. Problems in Learning
310. Seminar—Perception
311. Seminar—Instrumental Behavior
312. Seminar—Theoretical Psychology
316. Seminar—Social Psychology
318. Seminar in Social Influence
320. Seminar—Theory of Mental Tests
322. Seminar—Personnel Psychology
324. Seminar—Behavioral Studies of the Brain
335-336. Clinical Psychology Practicum
338. Seminar—Research in Mental Health and Mental Disorder
341. Society, Culture, and Behavior Disorders
342. Principles of Psychotherapy
344, 345. Advanced Seminar in Clinical Psychology
371. Pre-School Behavior Problems*

RELIGION

PROFESSOR BEACH, DIRECTOR OF GRADUATE STUDIES—308 DIVINITY SCHOOL; PROFESSORS CLARK, CUSHMAN, PETRY, SMITH, AND STINESPRING; ASSOCIATE PROFESSORS ANDERSON, HENRY, HERZOG, LACY, MANSCHRECK, POTEAT, PRICE AND RANSON; ASSISTANT PROFESSOR HILLERBRAND

The Department of Religion offers graduate work leading to the A.M. and Ph.D. degrees. Students may major in one of three fields: (1) Biblical Studies; (2) Historical Studies; and (3) Systematic and Contemporary Studies. They will be expected to take such courses in one or both of the other fields as will conduce to an adequate understanding of their chosen fields of specialization.

In addition to course work in these major fields, students will take such other courses in cognate fields as will contribute to the enrichment of their major studies. For those majoring in Biblical Studies, courses in ancient language and literature are suggested; for those majoring in Historical Studies, courses in history are suggested; and for those majoring in Systematic and Contemporary Studies, courses in philosophy, political science, and sociology are suggested.

Candidates for the Ph.D. degree must complete the language requirements in both French and German not later than the beginning of the second year of residence.

FIELD I. BIBLICAL STUDIES

201-202. First Hebrew
207-208. Second Hebrew
209. Biblical Theology
217. The New Testament in Greek
218. Galatians and First Corinthians (Not 1960-61)
228. The Theology of the Gospel and Epistles of John
302. Theology of the Intertestamental Literature
304. Aramaic
305. Third Hebrew (Not 1960-61)

307. Syriac (1960-61)
309. History of the Ancient Near East (Not 1960-61)
310. Old Testament Prophecy
311. The Life and Teachings of Jesus
313. The Apostolic Fathers
316. Hellenistic Religions
317. The Synoptic Gospels
318. Textual Criticism of the New Testament

FIELD II. HISTORICAL STUDIES

224. Conceptions of Man in Western Thought
235. The Reformation in the Life and Thought of Melanchthon
296. Religion on the American Frontier
321. Platonism and Christianity.
322. Nineteenth-Century European Theology.
330. The Church in Europe Since 1800
331. The Social Message of the Early and Medieval Church (Not 1960-61)
332. The Medieval Church
334. Church Reformers and Christian Unity (Not 1960-61)
336. Christian Mysticism in the Middle Ages
337. The Theology of Martin Luther
339. Left Wing Movements of the Reformation
370. Seminar: Jonathan Edwards
387. Christian Ethics and Social Philosophy
391. Historical Types of Christian Ethics I (Not 1960-61)
392. Historical Types of Christian Ethics II (Not 1960-61)
395. Christian Thought in Colonial America
396. Christian Thought in Nineteenth Century America (Not 1960-61)

FIELD III. SYSTEMATIC AND CONTEMPORARY STUDIES

320. Seminar: Friedrich Schleiermacher
325. Philosophical Theology I
326. Philosophical Theology II (Not 1960-61)
328. Twentieth-Century European Theology
372. Seminar: Paul Tillich (Not 1960-61)
380. Existentialism
389. Christian Ethics and Contemporary Culture
390. Current Problems in Christian Ethical Theory
393. The Christian Interpretation of History
394. Christianity and the State (Not 1960-61)
397. Contemporary American Theology

ROMANCE LANGUAGES

PROFESSOR DAVIS, CHAIRMAN—214 CARR BUILDING; PROFESSOR PREDMORE, DIRECTOR OF GRADUATE STUDIES—201 CARR BUILDING; PROFESSORS CASTELLANO, DOW, JORDAN, AND WALTON; ASSOCIATE PROFESSORS CHERPACK, CORDLE, AND FEIN; ASSISTANT PROFESSORS GRANT AND VINCENT

The Department of Romance Languages offers graduate work leading to the A.M. and Ph.D. degrees. In order to undertake graduate study in this Department, the student should normally have credit for four years of college courses in the chosen language, or 18 semester hours beyond the conventional two units offered at entrance to college. In addition to this minimum requirement, the student should have had one semester of review in composition and grammar.

It is recommended that candidates for the A.M. degree take a second Romance language as the minor subject.

A candidate for the Ph.D. degree should be equipped to follow graduate courses in a second Romance language. For this degree some training in Romance linguistics will be required, the amount to be determined by the Department upon consideration of the student's preparation in the field.

FRENCH

213. French Classicism—Initial Phase (1960-61)
214. French Classicism—Maturity (1960-61)
215, 216. The Modern French Novel (Not 1960-61)
219, 220. Old French Language and Literature (1960-61)

221. The Nineteenth Century French Novel—Initial Phase (Not 1960-61)
222. The Nineteenth Century French Novel—Continuation (1960-61)
227. French Poetry since Theophile Gautier (Not 1960-61)
238. Anatole France (Not 1960-61)
241, 242. French Literature and Thought in the Age of Enlightenment (1960-61)
245. French Literature of the Twentieth Century—1895-1925 (Not 1960-61)
246. French Literature of the Twentieth Century—1925-1955 (1960-61)
311, 312. French Seminar*
——. Graduate Reading Course

SPANISH

255. Modern Latin-American Literature (Not 1960-61)
256. Contemporary Latin-American Literature (1960-61)
257. Old Spanish Language (1960-61)
258. Old Spanish Literature (Not 1960-61)
260. Advanced Composition and Syntax
261. Nineteenth Century Novel (1960-61)
218. Evaluation of Objectives and Methods: Romance Languages
264. Modern and Contemporary Spanish Theatre (1960-61)
265. Golden Age Literature: Cervantes (1960-61)
266. Golden Age Literature: The Drama (Not 1960-61)
275. Contemporary Spanish Literature: Essay and Lyric Poetry (Not 1960-61)
276. Contemporary Spanish Literature: The Novel (Not 1960-61)
321, 322. Hispanic Seminar*

RUSSIAN

ASSISTANT PROFESSOR JEZIERSKI

No graduate degree is now offered in Russian. The following course may serve in the minor programs of students in other departments.

201, 202. The Novelists of Nineteenth-Century Russia

SOCIOLOGY AND ANTHROPOLOGY

PROFESSOR MCKINNEY, CHAIRMAN—215D SOCIAL SCIENCE BUILDING; ASSOCIATE PROFESSOR KERCKHOFF, DIRECTOR OF GRADUATE STUDIES—215E SOCIAL SCIENCE BUILDING; PROFESSORS LABARRE AND THOMPSON; ASSOCIATE PROFESSORS BACK, PREISS, ROY AND SMITH

The Department offers graduate work leading to the A.M. and Ph.D. degrees. Before undertaking advanced work in this department, a student must have completed a minimum of twelve semester hours of approved preliminary courses in the field, and twelve additional semester hours in the field or in related work. A student who is deficient in the minimum required work will be asked to take additional undergradate courses agreed upon in conference with the Director of Graduate Studies.

Areas of concentration within the department are: theory, methods and statistics, complex social systems, social organization and institutions, social psychology, and anthropology. The student's program of study will be distributed among these areas as determined through consultation with the Director of Graduate Studies and the student's supervisory committee.

Candidates for advanced degrees in sociology usually take minor work in psychology, economics, political science, mathematics, philosophy, or education. Detailed requirements for the minor work, and for majors in other departments who wish to present sociology as minor work, may be obtained from the Director of Graduate Studies.

232. Primitive Religion (Formerly 212)
234. Personality and Society (Formerly 213)
236. Personality and Culture (Formerly 214)
241. Social Stratification
242. The Sociology of Occupations and Professions (Formerly 158)
247. Community and Society (Formerly 237)
253. Social Institutions
255. Race and Culture (Formerly 238)

275. Social Attitudes and Individual Behavior
281. Development of Sociological Theory
282. Principles of Sociological Analysis
290-291. Methods of Sociological Research
296, 297. Statistical Analysis in Sociology
330. Seminar in Anthropology
341. Special Problems of Complex Social Systems.
(a) Industrial and Professional Systems
(b) Mass Communications
(c) Urban Society
(d) Human Ecology (Not 1960-61)
351, 352. Seminar in Social Organization
373, 374. Social Psychological Issues in Sociology
385, 386. Seminar in Sociological Theory
397, 398. Seminar in Special Research Problems

ZOOLOGY

PROFESSOR WILBUR, CHAIRMAN—224 BIOLOGY BUILDING; PROFESSOR HORN, ACTING DIRECTOR OF GRADUATE STUDIES—06 BIOLOGY BUILDING; PROFESSORS BOOKHOUT, GRAY, GREGG AND K. SCHMIDT-NIELSEN; ASSOCIATE PROFESSORS BAILEY, FLUKE, HUNTER, LIVINGSTONE AND ROBERTS; ASSOCIATE RESEARCH PROFESSOR B. SCHMIDT-NIELSEN; ASSISTANT PROFESSORS KLOPFER, SANDEEN, VERNBERG AND WARD

To undertake study toward an advanced degree in zoology a student should have completed an undergraduate major in zoology or its equivalent. This normally amounts to twenty-four or more hours of course work distributed among various fields of zoology, and must include comparative vertebrate anatomy or vertebrate zoology, embryology, and physiology. At least a year of chemistry is required. Physics is recommended. Candidates for the doctorate will be expected to have had not less than two years of chemistry and a year of botany. For some phases of zoology, organic chemistry is essential.

Required work for the A.M. ordinarily includes 18 units of advanced course work in zoology, six units of course work in a minor department, and an acceptable thesis.

Candidates for the Ph.D. degree are expected to be broadly trained zoologists. The program of each candidate is determined by a committee which reviews previous training and sets specific requirements to be met. Normally the program includes one or more graduate courses in each of several fields of zoology; courses in a minor subject; wide reading in science in general and in biology in particular; research; and a dissertation based on original work. A first draft of the thesis must be submitted to the major professor by March 15 of the year in which the degree is to be conferred.

201. Animal Behavior
203. Ecology
204. Advanced Parasitology
210. Experimental Genetics
216. Limnology (Not 1960-61)
222. Entomology
224. Vertebrate Zoology (Not 1960-61)
228. Experimental Embryology (Not 1960-61)
238. Systematic Zoology
243. Cytology
245. Radiation Biology
249. Physiology of Invertebrate Receptors, Effectors and Coordination.
252. Comparative Physiology
253. Advanced Vertebrate Morphology
271. Cellular Physiology
274. Invertebrate Zoology*
276. Protozoology
278. Invertebrate Embryology*
307. Foundations of Zoology*
345. Molecular Biology
351, 352. Departmental Seminar
353, 354. Research
355, 356. Seminar
Marine Laboratory (see page 45)

GRADUATE CREDIT FOR COURSES TAKEN IN THE SCHOOL OF LAW

Upon the recommendation of the Director of Graduate Studies, and upon the approval of the Dean of the Graduate School, students in the Social Sciences may take certain courses in the School of Law for graduate credit. In exceptional in-

stances courses in the School of Law may be considered as fulfilling a student's requirements for a minor.

MEDICAL SCHOOL

The facilities of the several Departments of the Medical School listed below and alphabetically as departments are available to qualified graduate students, already admitted to the Graduate School, for independent or supervised research and investigation, whether or not they are working toward advanced degrees.

Graduate students wishing to pursue a major or minor in any of the following departments, or to enroll in any of the courses listed elsewhere, should consult or write the appropriate Director of Graduate Studies.

Because of the special schedules maintained in the Medical School, graduate students should write the Directors to ascertain the precise dates when courses are offered.

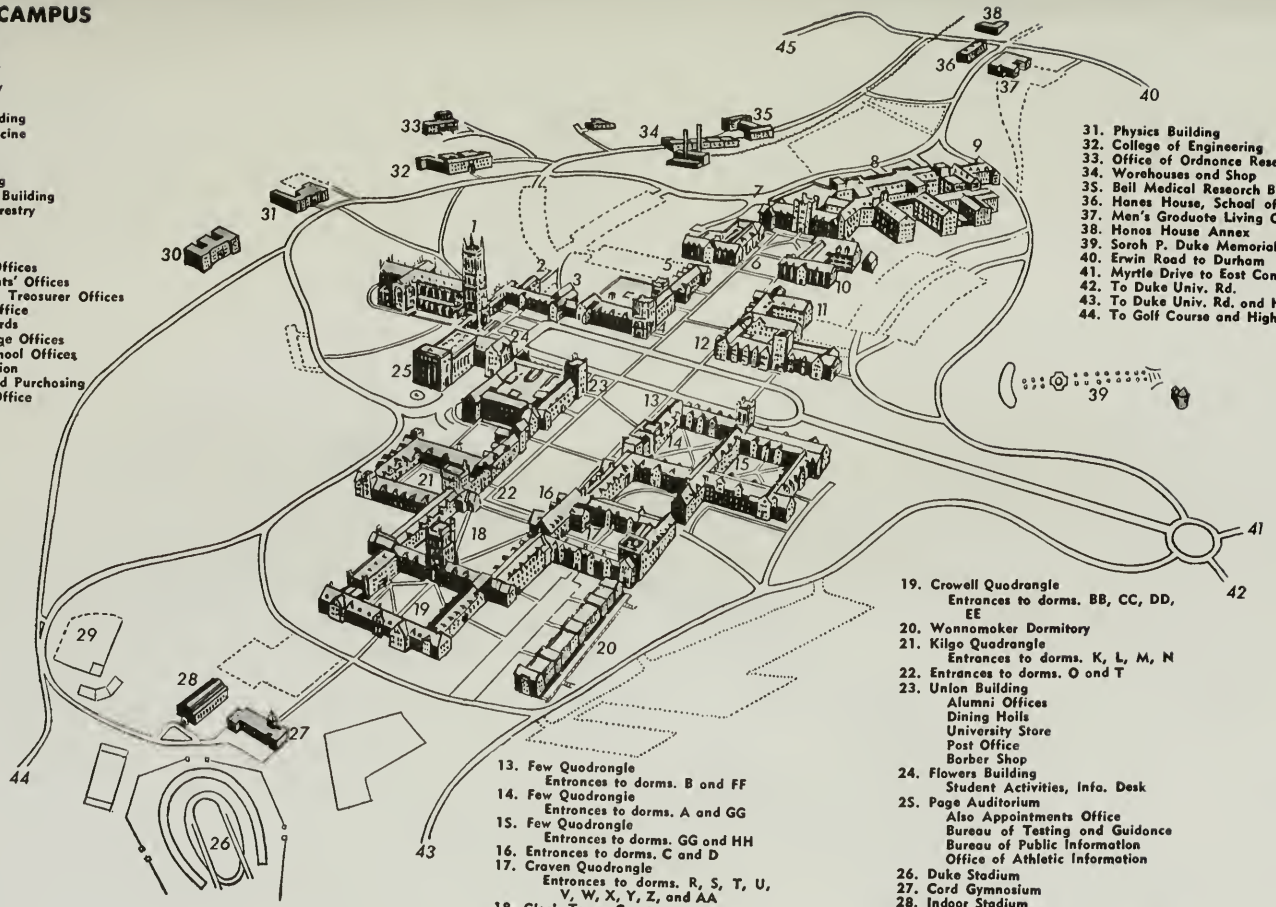
Anatomy (see p. 51)
Biochemistry and Nutrition (see p. 52)
Microbiology (including Mycology, Parasitology, and Hematology) see p. 59)
Physiology and Pharmacology (see p. 60)

GRADUATE CREDIT FOR STUDENTS SPECIALIZING IN PHYSICAL THERAPY

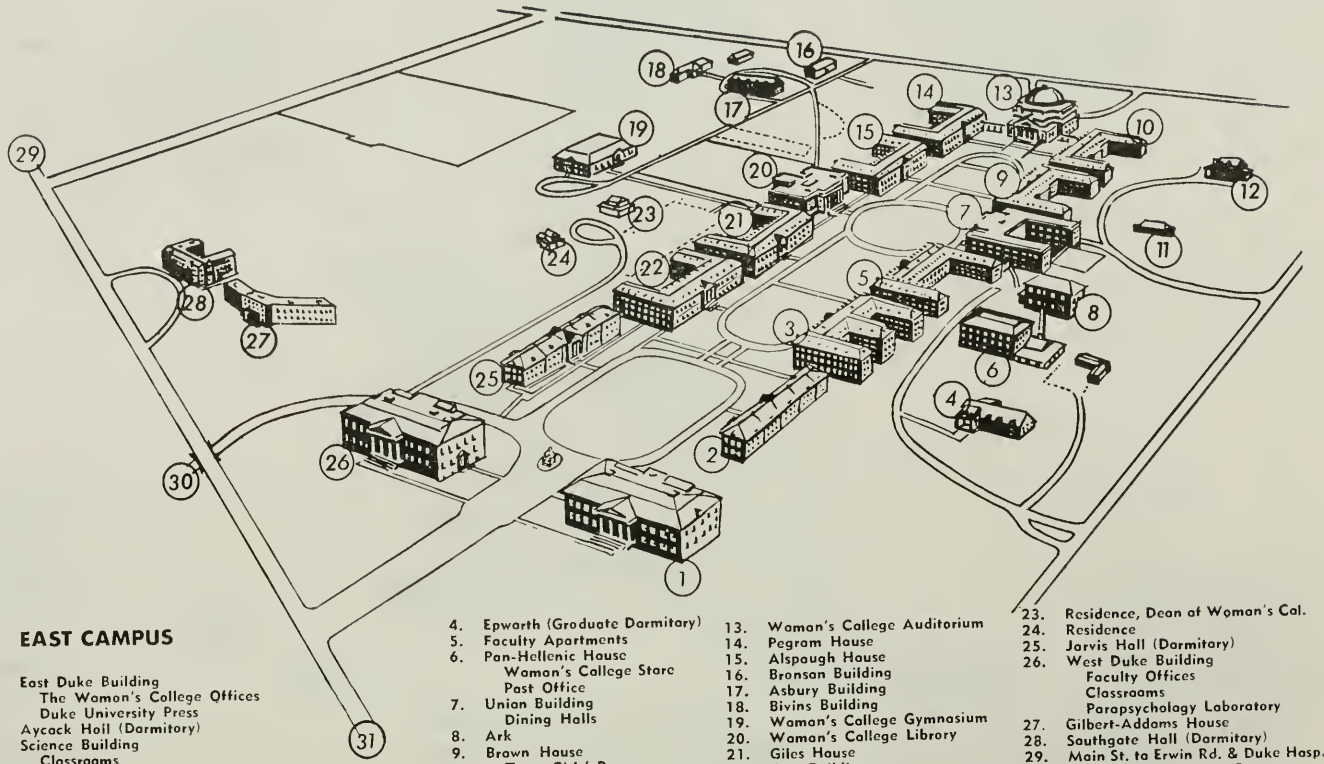
Students specializing in physical therapy may request admission in the Graduate School and if admitted receive graduate credit for the graduate courses in anatomy, physiology, and psychology. Later they may complete their work for the Master of Arts degree in anatomy or physiology. (See above.) The graduate courses required in this program are Anatomy M201, 6 units and Physiology M203, 6 units. To complete the major for the Master of Arts degree, selection may be made from the following courses: Anatomy M203, 4 units; Anatomy M205, 2 units; Zoology 271, 4 units; Physiology M372, 2 or more units. For information concerning the Physical Therapy program write Miss Helen Kaiser, Director, Physical Therapy Department, Box 3247, Duke University Medical Center.

WEST CAMPUS

1. Duke Chapel
2. Gray Building
3. Divinity School
4. General Library
5. School of Law
6. Chemistry Building
7. School of Medicine
8. Duke Hospital
9. Baker House
10. Biology Building
11. Social Science Building
    - School of Forestry
    - AROTC
    - NROTC
12. Allen Building
    - President's Offices
    - Vice-Presidents' Offices
    - Business and Treasurer Offices
    - Registrar's Office
    - Central Records
    - Trinity College Offices
    - Graduate School Offices
    - Summer Session
    - Personnel and Purchasing
    - Operations Office



13. Few Quadrangle
    - Entrances to dorms. B and FF
14. Few Quadrangle
    - Entrances to dorms. A and GG
15. Few Quadrangle
    - Entrances to dorms. GG and HH
16. Entrances to dorms. C and D
17. Craven Quadrangle
    - Entrances to dorms. R, S, T, U, V, W, X, Y, Z, and AA
18. Clock Tower Court
    - Entrances to dorms. E, F, G, H, I, J
19. Crowell Quadrangle
    - Entrances to dorms. BB, CC, DD, EE
20. Wannamaker Dormitory
21. Kilgo Quadrangle
    - Entrances to dorms. K, L, M, N
22. Entrances to dorms. O and T
23. Union Building
    - Alumni Offices
    - Dining Halls
    - University Store
    - Post Office
    - Barber Shop
24. Flowers Building
    - Student Activities, Info. Desk
25. Page Auditorium
    - Also Appointments Office
    - Bureau of Testing and Guidance
    - Bureau of Public Information
    - Office of Athletic Information
26. Duke Stadium
27. Card Gymnasium
28. Indoor Stadium
29. Baseball Diamond
30. Biology Bldg. (under construction 1958)
31. Physics Building
32. College of Engineering
33. Office of Ordnance Research
34. Warehouses and Shop
35. Bell Medical Research Building
36. Hanes House, School of Nursing
37. Men's Graduate Living Center
38. Hanes House Annex
39. Sarah P. Duke Memorial Gardens
40. Erwin Road to Durham
41. Myrtle Drive to East Campus
42. To Duke Univ. Rd.
43. To Duke Univ. Rd. and Hwy. 751
44. To Golf Course and Highway 751



EAST CAMPUS

1. East Duke Building
   The Woman's College Offices
   Duke University Press
2. Aycock Hall (Dormitory)
3. Science Building
   Classrooms
   Faculty Offices
   Laboratories
4. Epworth (Graduate Dormitory)
5. Faculty Apartments
6. Pan-Hellenic House
   Woman's College Store
   Post Office
7. Union Building
   Dining Halls
8. Ark
9. Brown House
   Town Girls' Room
10. Bassett House
11. Mordecai House
12. Infirmary
13. Woman's College Auditorium
14. Pegram House
15. Alspaugh House
16. Bronson Building
17. Asbury Building
18. Bivins Building
19. Woman's College Gymnasium
20. Woman's College Library
21. Giles House
22. Carr Building
    Classrooms
    Faculty Offices
23. Residence, Dean of Woman's Col.
24. Residence
25. Jarvis Hall (Dormitory)
26. West Duke Building
    Faculty Offices
    Classrooms
    Parapsychology Laboratory
27. Gilbert-Addams House
28. Southgate Hall (Dormitory)
29. Main St. to Erwin Rd. & Duke Hosp.
30. Myrtle Drive to West Campus
31. Main Street to Durham

BULLETIN
OF
DUKE UNIVERSITY

The Summer Session 1960

First Term: June 10 to July 15
Second Term: July 16 to August 20

VOLUME 32 February, 1960 Number 4

Annual Bulletins

For Bulletin of Information for Prospective Students, apply to *The Registrar,* Duke University, Durham, N. C.

For Bulletin of Undergraduate Instruction, apply to *The Registrar,* Duke University, Durham, N. C.

For Bulletin of The College of Engineering, apply to *The Registrar,* Duke University, Durham, N. C.

For Bulletin of The Graduate School of Arts and Sciences, apply to *The Dean of the Graduate School,* Duke University, Durham, N. C.

For Bulletin of The School of Forestry, apply to *The Dean of the School of Forestry,* Duke University, Durham, N. C.

For Bulletin of The School of Law, apply to *The Dean of the School of Law,* Duke University, Durham, N. C.

For Bulletin of The School of Medicine, apply to *The Dean of the School of Medicine,* Duke University, Durham, N. C.

For Bulletin of The School of Nursing, apply to *The Dean of the School of Nursing,* Duke University, Durham, N. C.

For Bulletin of The Divinity School, apply to *The Dean of the Divinity School,* Duke University, Durham, N. C.

For Bulletin of The Summer Session, apply to *The Director of the Summer Session,* Duke University, Durham, N. C.

For General Bulletin of Duke University, apply to *The Registrar,* Duke University, Durham, N. C.

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BULLETIN

OF

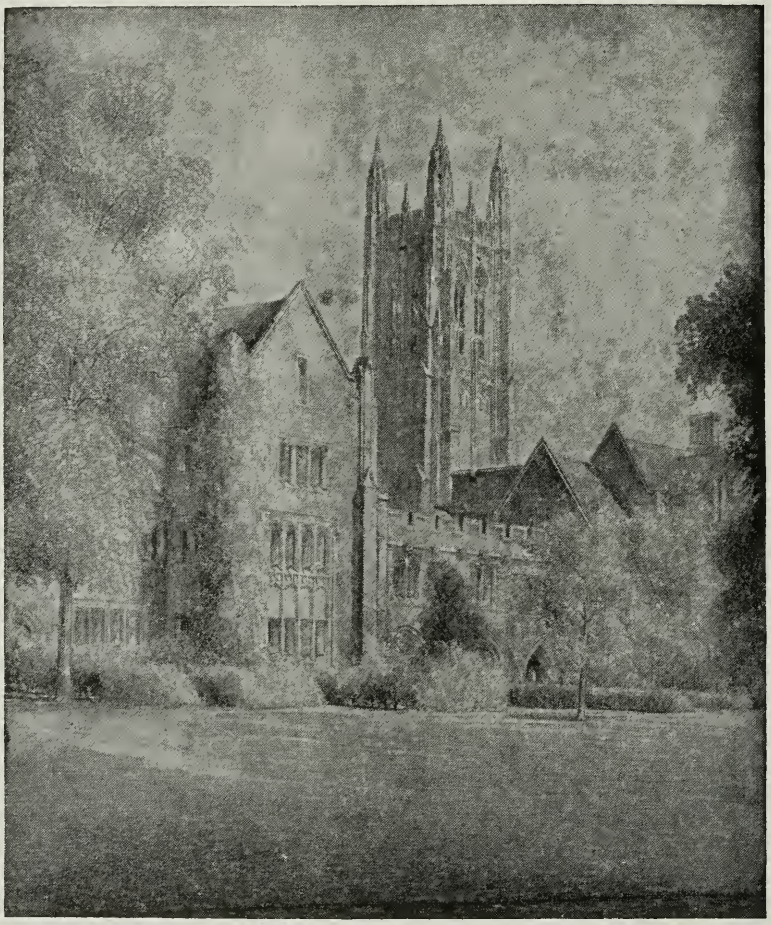
DUKE UNIVERSITY

The Summer Session 1960

ANNOUNCEMENTS

First Term: June 10 to July 15
Second Term: July 16 to August 20

DURHAM, NORTH CAROLINA
1960



The Chapel Tower

(From an etching by Louis Orr)

The Chapel Tower dominates the scene of West, or the University, Campus, and it symbolizes the spiritual heritage of the University. The predominantly Gothic architecture, traditionally restless and aspiring, contributes to the intellectually stimulating atmosphere of the University and provides an appropriate setting for educational endeavors.

Calendar of the Summer Session 1960

JUNE						
S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

JULY						
S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

AUGUST						
S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

June 6-July 1, Monday-Friday
Western Electric Conference.

June 9, Thursday, 9:00 a.m.
Dormitory rooms ready for occupancy.

June 10, Friday
Registration for First Term.

June 11, Saturday
Instruction begins in all 3 s.h. courses of the First Term.

June 13-July 22, Monday-Friday
Summer Computer Institute for college teachers of mathematics.

June 13-July 23, Monday-Saturday
Research Conference on Christianity and Politics.

June 16-17, Thursday-Friday
Conference on Elementary Education—Science.

June 20, Monday
Instruction begins in all 4 s.h. courses of the First Term in Chemistry, Geology, and Physics.

June 23, Thursday
Final date for filing with the Dean of the Graduate School statement of intention to complete Master's degree requirements during the First Term, and for filing title of Master's thesis.

June 28-29 Tuesday-Wednesday
School Law Conference.

July 4, Monday
No classes meet.

July 6, Wednesday (4:00 p.m. in Room 233, Allen Building) Graduate reading examinations in French. Applicants must register in Graduate School not later than June 29.

July 7, Thursday (1:30 p.m. in Room 233, Allen Building) Major examination for candidates for the M.Ed. degree without thesis.

July 14-15, Thursday-Friday
Final Examinations for the First Term.

July 16, Saturday
Registration for all Second Term courses, including the *science* courses.

July 18, Monday
Instruction begins in all Second Term courses, including *science* courses.

July 18-August 12, Monday-Friday
School for Approved Supply Pastors.

July 18-September 16, Monday-Friday
The Initial Session of the 1960-61 Retired Armed Services Officers Training Program.

July 28, Thursday
Final date for filing with the Dean of the Graduate School statement of intention to complete Master's degree requirements during the Second Term, and for filing title of Master's thesis.

August 6, Saturday
No classes meet.

August 6-14, Saturday-Sunday
Conference of the School of Missions Committee of the Woman's Society of Christian Service of the North Carolina Conference of the Methodist Church.

August 11, Thursday (1:30 p.m., Room 233, Allen Building)
Major examination for candidates for the M.Ed. degree without thesis.

August 12, Friday
Final examinations in all 4 s.h. courses of the Second Term in Chemistry, Geology, and Physics.

August 15-19, Monday-Friday
Conference of the Youth Council of the Methodist Youth Fellowship.

August 19-20, Friday-Saturday
Final examinations in all 3 s.h. courses in the Second Term.

August 20-21, Saturday-Sunday
Laymen's Assembly of the North Carolina Conference of the Methodist Church.

September 19, Monday
Registration, Fall Semester, 1960.

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Administrative Officers of the Summer Session

Arthur Hollis Edens, Ph.D., LL.D.
President of Duke University

Paul Magnus Gross, Ph.D.
Vice-President in the Division of Education

Charles Edward Jordan, A.B., LL.D.
Vice-President in the Division of Public Relations

Herbert James Herring, A.M., LL.D.
Vice-President in the Division of Student Life

Marcus Edwin Hobbs, Ph.D.
Dean of the University

Alfred Smith Brower, A.B.
Treasurer

Gerhard Chester Henricksen, C.P.A.
Business Manager and Comptroller

John Marion Dozier, A.B.
Secretary

Paul Hibbert Clyde, Ph.D.
Director of the Summer Session

Olan Lee Petty, Ph.D.
Acting Director of the Summer Session

Richard Lovejoy Tuthill, Ed.D.
University Registrar

Roberta Florence Brinkley, Ph.D., LL.D.
Dean of the Woman's College

Allan Murray Cartter, Ph.D.
Dean of the Graduate School of Arts and Sciences

Robert Earl Cushman, B.D., Ph.D.
Dean of the Divinity School

Ellwood Scott Harrar, Ph.D.
Dean of the School of Forestry

Ann Madeline Jacobansky, M.Ed.
Dean of the School of Nursing

Alan Krebs Manchester, Ph.D.
Dean of Trinity College and Assistant to the Vice-President in the Division of Education

Walter James Seeley, M.S.
Dean of the College of Engineering

Charles Eugene Ward, Ph.D.
Dean of Undergraduate Studies

Cazlyn Green Bookhout, Ph.D.
Director of the Duke Marine Laboratory

Francis Ezra Bowman, Ph.D.
Director of Admissions, Graduate School of Arts and Sciences

Robert B. Cox, A.M.
Dean of Undergraduate Men

Ellen Harris Huckabee, A.M.
Dean of Undergraduate Instruction, The Woman's College

Marianna Duncan Jenkins, Ph.D.
Associate Dean of Undergraduate Instruction, The Woman's College

Charles Buchanan Johnson, Ed.D.
Assistant Dean of Trinity College

Barney L. Jones, Ph.D.
Assistant Dean of Trinity College

David Vance Martin, A.M.
Assistant in the Summer Session

Mrs. Elizabeth Anderson Persons, A.M.
Director of Admissions, The Woman's College

Howard Austin Strobel, Ph.D.
Assistant Dean of Trinity College

Everett Broadus Weatherspoon, A.B.
Director of Admissions, Trinity College and the College of Engineering

Mary Grace Wilson, A.M.
Dean of Undergraduate Women

Genevieve McCracken, B.S.
Social Director, Term I

Nancy Lippard, M.Ed.
House Counselor Women's Residence, Term I

Catherine S. Deaton, A.B.
Social Director, Term II

Anne Miller Brown, A.B.
House Counselor Women's Residence, Term II

W. S. Persons, A.B.
Recreation Supervisor for the Summer Session

James T. Cleland, D.D.
Dean of the Chapel

Howard Charles Wilkinson, B.D.
Chaplain to the University and Director of Religious Activities

Paul Young, M.A.
Director of Choral Music

The Summer Session Faculty

Richard H. Allen, M.A.
Instructor in German

Hugh Anderson, Ph.D.
Associate Professor of Biblical Theology

James C. Baxter, Ph.D.
Research Clinical Psychologist John Umstead Hospital

Robert W. Binkley, Ph.D.
Instructor in Philosophy

John O. Blackburn, Ph.D.
Visiting Assistant Professor of Economics

Edward Claude Bolmeier, Ph.D.
Professor of Education

James Bonk, Ph.D.
Instructor in Chemistry

Cazlyn Green Bookhout, Ph.D.
Professor of Zoology

David Gilbert Bradley, Ph.D.
Associate Professor of Undergraduate Religion

Frances Campbell Brown, Ph.D.
Professor of Chemistry

Joseph A. Bryant, Ph.D.
Associate Professor of English

Louis J. Budd, Ph.D.
Assistant Professor of English

William S. Bush, Jr., M.A., Docteur de l'Universite de Paris
Instructor in Romance Languages

David Williams Carpenter, Ph.D.
Professor of Physics

John W. Carr, Jr., Ph.D.
Professor of Education

William H. Cartwright, Ph.D.
Professor of Education

Leon Edward Chaiken, M.F.
Professor of Forest Management and Assistant Director of the Forest

Robert Lee Chambers, B.S. in Ed.
Coach of Varsity Track; Head Trainer

Clifton Cherpack, Ph.D.
Associate Professor of Romance Languages

Romane Lewis Clark, Ph.D.
Associate Professor of Philosophy

Joel G. Colton, Ph.D.
Associate Professor of History

Robert Merle Colver, Ed.D.
Associate Professor of Education

Thomas Howard Cordle, Ph.D.
Associate Professor of Romance Languages

Avery Craven, Ph.D.
Visiting Professor of History University of Chicago

Boyd Lee Daniels, Ph.D.
Assistant Professor of Undergraduate Religion

Paul G. Daston, Ph.D.
Assistant Professor of Psychology and Assistant Professor of Medical Psychology

Donald J. Dewey, M.A.
Associate Professor of Economics

Richard M. Dunham, Ph.D.
Chief Psychologist, Dorothea Dix Hospital

Arthur Stephen Dunning, Ph.D.
Assistant Professor of Education

Robert F. Durden, Ph.D.
Assistant Professor of History

William Whitfield Elliott, Ph.D.
Professor of Mathematics

Charles A. Fenton, Ph.D.
Professor of English

Arthur Bowles Ferguson, Ph.D.
Associate Professor of History

Weston Flint, Ph.D.
Assistant Professor of Romance Languages

James M. Folsom, B.B.A.
Instructor in Economics

Mrs. Ila Gehman, Ed.D.
Lecturer in Psychology

W. Scott Gehman, Jr., Ph.D.
Associate Professor of Psychology in Education

Hans W. Gerhard, Ph.D.
Visiting Assistant Professor of Economics

Donald Gillin, Ph.D.
Instructor in History

Clarence Gohdes, Ph.D.
Professor of English

Irving Emery Gray, Ph.D.
Professor of Zoology

Egil Grislis, Ph.D.
Assistant Professor of Historical Theology

Herbert R. Hahn, M.B.A.
Visiting Assistant Professor of Economics

Aaren Maynor Hardee, A.M.
Instructor in Romance Languages

Francis Parks Harrison, Ph.D.
Associate Professor of Physical Education; Assistant Coach of Wrestling

Stuart C. Henry, Ph.D.
Associate Professor of American Christianity

Stephen Duncan Heron, Jr., Ph.D.
Assistant Professor of Geology

Frederick L. Herzog, Th.D.
Associate Professor of Systematic Theology

Douglas Greenwood Hill, Ph.D.
Professor of Chemistry

Harold J. Humm, Ph.D.
Associate Professor of Botany

Allan S. Hurlburt, Ph.D.
Professor of Education

Terry Walter Johnson, Jr., Ph.D.
Associate Professor of Botany

Edward S. Jones, Ph.D.
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University of Buffalo

Catherine Keever, Ph.D.
Visiting Professor of Botany
State College, Millersville, Pennsylvania

Thomas F. Keller, Ph.D.
Assistant Professor of Economics

Richard Austin King, Ph.D.
Visiting Assistant Professor of Psychology
University of North Carolina

Mary Eleanor Krummel, A.M.
Instructor in Romance Languages

Creighton Lacy, Ph.D.
Associate Professor of Missions and Social Ethics

Thomas A. Langford, Ph.D.
Assistant Professor of Undergraduate Religion

Richard H. Leach, Ph.D.
Assistant Professor of Political Science

Gustavus H. Miller, Ph.D.
Assistant Professor of Romance Languages

William Van O'Connor, Ph.D.
Visiting Professor of English
University of Minnesota

Robert Tappan Osborn, Ph.D.
Assistant Professor of Undergraduate Religion

John R. Palacios, Ph.D.
Assistant Professor of Education

Roland J. Pellegrin, Ph.D.
Visiting Professor of Sociology
Louisiana State University

Olan Lee Petty, Ph.D.
Associate Professor of Education

William Hardman Poteat, Ph.D.
Associate Professor of Christianity and Culture

Richard Lionel Predmore, D.M.L.
Professor of Romance Languages

Jesse Harris Proctor, Jr., Ph.D.
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Assistant Professor of Chemistry

Guy H. Ranson, Ph.D.
Visiting Associate Professor of Christianity and Social Ethics

McMurry S. Richey, Ph.D.
Associate Professor of Theology and Christian Nurture

Dana Phelps Ripley, M.A.
Instructor in Romance Languages

Mary Robertson, M.A.
Visiting Professor of Economics
University of Nottingham, England

Theodore Ropp, Ph.D.
Professor of History

Donald Francis Roy, Ph.D.
Associate Professor of Sociology

Mabel F. Rudisill, Ph.D.
Associate Professor of Education

Reames Hawthorne Sales, Ph.D.
Assistant Professor of Undergraduate Religion

Herman Salinger, Ph.D.
Professor of German

Karl Sandberg, M.A.
Instructor in Romance Languages

John Henry Saylor, Ph.D.
Professor of Chemistry

Francis Xavier Schumacher, D.Sc.
Professor of Forestry

Richard K. Seymour, Ph.D.
Assistant Professor of German

Grover C. Smith, Jr., Ph.D.
Assistant Professor of English

Harold Patty Stephenson, Ph.D.
Associate Professor of Mechanical Engineering

Lionel Stevenson, B. Litt. (Oxon.), Ph.D., F.R.S.L.
James B. Duke Professor of English

Wippert Arnot Stumpf, Ph.D.
Associate Professor of Education

Tatsuji Takeuchi
Visiting Professor
Dean of the Law Faculty, Kwansei Gakuin University, Japan

Kenneth John Tharp, B.S. in C.E.
Assistant Professor of Civil Engineering

Joseph Miller Thomas, Ph.D.
Professor of Mathematics

Alfred Tischendorf, Ph.D.
Assistant Professor of History

Elias Torre, Doctor en Filosofia y Letras
Associate Professor of Romance Languages

James Nardin Truesdale, Ph.D.
Professor of Greek

James Vander Zanden, Ph.D.
Instructor in Sociology

F. John Vernberg, Ph.D.
Assistant Professor of Zoology

Loring Baker Walton, Lic ès L., Ph.D.
Professor of Romance Languages

Cecil Hillburn Womble, Ph.D.
Instructor in Latin

Stanley P. Wronski, Ph.D.
Visiting Associate Professor of Education
Michigan State University

William P. Yohe, Ph.D.
Assistant Professor of Economics

To Former Students and to Prospective Students of the Summer Session

The Summer Session at Duke University makes available to Duke students, to students from other universities and colleges, to teachers in elementary and secondary schools, and to other special students a notable program of instruction in many fields of knowledge, both academic and professional.

Course programs offered during the summer are designed to meet special and particular needs as well as the more conventional requirements leading to specific degrees.

Undergraduates of Duke University who desire to accelerate their programs may complete the work for a degree in three years by attending two and one-half Summer Sessions.

Graduates of accredited high schools, both men and women, who have been admitted to the freshman class of Duke University may begin their work in the Summer Session.

Undergraduates from other colleges and universities may enjoy the special advantages of summer instruction at Duke and transfer earned credits to their own institutions.

Graduate students who have been admitted to the Graduate School to study for the Master of Arts, Master of Education, and Master of Arts in Teaching degrees will find courses arranged in sequence from summer to summer to meet their requirements.

Teachers from elementary and secondary schools who desire to earn credits toward the renewal of their certificates and who are interested in further teacher training in subject content and method may enroll in senior-graduate courses as special or unclassified students.

While the summer course program meets in many departments the needs of degree candidates, it goes beyond these limits in presenting also courses of wide general interest and, in addition, special non-credit lectures, conferences, institutes, and workshops.

Duke University's ample and modern research facilities will be available during the summer to all properly qualified students. It is the hope of the University, of the summer faculty, and of the administrative officers that former students and new students will find increasing values in each summer spent at Duke.

THE DIRECTOR

Admission

THE general requirement for admission to the Summer Session is graduation from an accredited secondary school or its equivalent. Rejection of a student's application for admission to one of the University's Colleges or Schools does not preclude admission of that student to the Summer Session as a special or unclassified student.

Admission to specific courses offered in the Summer Session is governed by the student's academic status (freshman, sophomore, junior, senior, graduate, special or unclassified) and by the prerequisites of the course in question.

Students in Residence at Duke University during the Spring Semester 1960

A Duke University student, either graduate or undergraduate, who plans to attend the Summer Session should at the time of pre-registration for the fall semester (see p. 21 for specific dates) enroll for the desired Summer Session courses. He need *not* file with the Summer Session the application blank at the end of this *Bulletin*.

Students Not in Residence at Duke University during the Spring Semester 1960

UNDERGRADUATES. New students seeking to enter Duke University as freshmen or as undergraduates with advanced standing, and undergraduates who wish to re-enter the University should write the Office of Admissions requesting regular application forms.

Undergraduates, both men and women, enrolled in other colleges and universities who desire to earn in the Duke University Summer Session credits which are to be transferred to their own institutions should apply directly to the Director of the Summer Session, Duke University, on the application form at the end of this *Bulletin*. They should give accurately and clearly all information called for on the application form.

GRADUATES. Students with graduate standing and teachers in service with or without the Bachelor's degree who wish to earn credits toward the renewal or the advancement of their certificate and who

do not wish to become candidates for a degree at Duke University should apply to the Director of the Summer Session on the application form at the end of this *Bulletin*.

Graduate students who are seeking admission to the Graduate School of Arts and Sciences and those who have been admitted to the Graduate School must apply to the Director of the Summer Session on the application form at the end of this *Bulletin*. Those who are seeking admission to the Graduate School *must also file* Graduate School application forms which may be secured by writing to the Dean of the Graduate School, Duke University, Durham, North Carolina.

Admission to Degree Candidacy

Credits earned during the Summer Session may be applied toward the requirements of a degree.

UNDERGRADUATES. A student seeking to enroll as a candidate for the Bachelor's degree from one of the colleges of Duke University must meet the entrance requirements set forth in the *Bulletin of Undergraduate Instruction* and be accepted by the Director of Admissions. This *Bulletin* may be secured by writing the Office of Admissions, Duke University.

GRADUATES. A student seeking to enroll as a candidate for one of the advanced degrees offered by the Graduate School of Arts and Sciences of Duke University must meet the requirements set forth on pages 32-39 of this *Bulletin*.

Admission of Veterans

All veterans who plan to attend Duke University for the first time during the Summer Session of 1960 should have a Certificate for Education and Training ready to present at the time of registration. This form may be secured by applying to the Veterans' Administration. In the event a student has previously been enrolled under the G. I. Bill of Rights and his last enrollment was at Duke University no Certificate is necessary. Any correspondence should be addressed to: The Veterans' Office, Allen Building, Duke University, Durham, N. C.

Financial Information, Living Accommodations, and Medical Care

Fees

The University Fee:
Covering registration, tuition, and medical care.....$21.50 per semester hour
Teachers in full-time service in Elementary and Secondary Schools..... 10.00 per semester hour
Divinity School students approved by the Dean of that school..... 10.75 per semester hour

Laboratory Fees: (These where applicable are in addition to the University Fee.)
Marine Laboratory.....$10.00 per course
(For Marine Laboratory investigators' research table fees see Marine Laboratory Bulletin.)

Fees Replacing University Fee:
Medical Mycology.....$100.00

Master's Degree Summer Session Fee:
A candidate for the Master's degree who completes in the Summer Session 15 or more semester hours required for the degree and who finishes the work in the Summer Session pays a degree fee of.....$25.00
A Master's degree candidate who is not required to pay the fee under Item 1 above, but who takes a thesis examination during the Summer Session, is required to pay a degree fee of.....$10.00
A Master's degree candidate who, in the fall or spring semesters, completes 15 or more semester hours required for the degree and who finishes the work in the Summer Session without a thesis examination is not required to pay the degree fee.

Auditing Fees (See p. 23 for definition):
1. Students registered for a full course program may audit non-laboratory courses (with the permission of the Director) at no extra charge.
2. Students carrying less than a full course program may be granted permission to audit a course or courses on payment of half the University fee per semester hour audited.....$10.75 per s.h.

Late Registration Fee:
Students who fail to register prior to the first class day of a given course will pay an extra fee of.....$ 5.00

Fee for Course Changes:
Course changes other than those required by the University will be made only on payment of an extra fee of.....$ 1.00

Fee for Make-up Final Examination.....$ 3.00

Refund of Fees:

a. When applications for withdrawal are received by the Director of the Summer Session before the close of registration on registration day, full fees will be refunded.

b. When applications for withdrawal are received by the Director of the Summer Session during the first four class days of a given term 80 per cent of the fees will be refunded.

c. When applications for withdrawal are received by the Director of the Summer Session after the fourth class day there will be no refund of fees.

Student Aid

SPECIAL FEES TO TEACHERS: Teachers in full-time service in elementary and in secondary schools, who are accepted by the Summer Session, pay only $10.00 per semester hour. Teachers on leave of absence from their schools and teachers not currently employed are not eligible for this special fee.

SCHOLARSHIPS FOR PUBLIC SCHOOL PERSONNEL: Duke University will offer forty special scholarships of $150.00 each to high school and elementary teachers on a competitive basis (not by a written examination) for the Summer Session of 1960. This scholarship program is designed to encourage teachers to begin or to continue their graduate studies leading to the A.M., M.Ed., or M.A. in Teaching degree.

Duke University will again offer six special scholarships of $200.00 each to high school and elementary administrators and supervisors. This scholarship program is designed to encourage principals and supervisors to continue their graduate studies leading to advanced degrees.

Although successful applicants for the scholarships will not be required to become candidates for a degree, they must qualify for and receive admission to the Graduate School of Arts and Sciences.

All applications with supporting documents must be submitted by April 1, 1960. Selection and appointment of scholars will be completed by May 1, 1960.

Application blanks and complete information may be obtained from the Director of the Summer Session, Duke University, Durham, North Carolina.

SCHOLARSHIPS IN ASIAN STUDIES: To encourage students who may profit through the University's program in Asian Studies, the Japan Society and Asia Foundation collaborate in offering through the Summer Session of Duke University ten scholarships on a competitive basis, not by examination, to qualified applicants. Each scholarship is valued at $200.00. Public school teachers, college and university teachers, and other students of public affairs may apply for these scholarships. Address all communication to the Director of the Summer Session, Duke University.

LOANS: A number of loan funds have been established for the benefit of the students of Duke University. Several of these funds are available to students enrolled in the Summer Session. These funds are administered through a committee of officers of the University.

The committee, in approving loans, selects those students who from

the standpoint of character, scholastic attainment, and degree of financial need are deserving of consideration.

Applicants for loans should make application to the Loan Committee, Office of the Executive Secretary, University Scholarship Committee, Duke University. All applications must be initiated during the first week of each term. The granting or withholding of a loan is a matter entirely within the discretion of the Loan Committee. A student is expected to use all other possible means of securing financial assistance before applying for aid from a loan fund.

NATIONAL DEFENSE EDUCATION ACT LOANS: A limited number of loans may be made under the provisions of the National Defense Education Act of 1958, to students in the Summer Session who have been regularly enrolled in the University prior to the Summer Session. Inquiries concerning opportunities available under this program should be addressed to the Executive Secretary, University Scholarship Committee, Duke University.

REMISSION OF TUITION: Certain students attending Duke University are entitled to a remission of the tuition charge. Students in one of the privileged groups listed below are entitled to a maximum of eight semesters of free tuition at the undergraduate level. Each Summer Session in which work is taken and each semester spent in another institution will be counted as one of the eight allowable semesters. Only those students enrolled in the regular undergraduate program leading to a baccalaureate degree from Duke University are entitled to remission of the tuition charge.

All students entitled to a remission of tuition must apply to the Executive Secretary of the University Scholarship Committee for this consideration.

Group I. All students enrolled before the fall semester, 1960, who are preparing to enter full-time religious work in a denomination maintaining a paid ministry are entitled to remission. Details of this program may be obtained from the Executive Secretary of the University Scholarship Committee.

Group II. Children of ministers who are members of the North Carolina and Western North Carolina Conferences of the Methodist Church are entitled to remission as are the children of ministers of all faiths residing in Durham County, North Carolina. This consideration is given only to the children of resident members of the two North Carolina conferences who are giving their full time to religious work.

Group III. Remissions are given to the children, step-children and adopted children of Officers, Faculty, and Staff members of Duke

University. Information concerning eligibility under this provision may be obtained by writing to the Executive Secretary of the University Scholarship Committee.

Residence Hall Accommodations

The Residence Hall facilities of Duke University West Campus will be used for the 1960 Summer Session except in the case of the Marine Laboratory. The Men's Graduate Center will be used for men enrolled in the Graduate School and for men enrolled in the Summer Session who desire to live in the Men's Graduate Center; however, the dining halls in the Men's Graduate Center probably will not serve meals during the Summer Session. An area in Few Quadrangle will be available to men enrolled in the Graduate Schools and the Summer Session, who desire to live near the Union dining halls, classrooms and library. An area in Craven Quadrangle and Few Quadrangle will be available to undergraduate men. Kilgo Quadrangle will be available for women with designated houses reserved for graduate women and undergraduate women. The University does not provide living accommodations for married couples.

UNDERGRADUATES, both women and men, are required to live in the residence houses unless they are married or are living with parents or relatives. Any exception must be approved in advance by the Dean of Undergraduate Women or the Dean of Undergraduate Men as the case may be.

Most rooms are furnished for two persons. Only a limited number of rooms are furnished as singles for one person. Furniture consists of single beds with mattresses, an individual clothes closet for each person, a chest of drawers for two persons, a study table, chairs, bookcase, wastebasket, and window shades. Linens, blankets, towels, and pillows are not furnished by the University.

The Marine Laboratory is located on Pivers Island adjoining the United States Bureau of Fisheries across the Newport River from Beaufort, North Carolina. Three cottage-type residence halls are available with a separate building for dining hall and social activity. All rooms in the Marine Laboratory are equipped for two persons.

Residence Hall Rooms—Rates

Single Room	5 weeks' term	$35.00	
	4 weeks' term	28.00	
	3 weeks' term	21.00	
	1 week's term	7.00	
Double Room	5 weeks' term	45.00	$22.50 each person
	4 weeks' term	36.00	18.00 each person
	3 weeks' term	27.00	13.50 each person
	1 week's term	9.00	4.50 each person

Double Room Furnished as a Single Room and Occupied by One person	5 weeks' term	40.00
	4 weeks' term	32.00
	3 weeks' term	24.00
	1 week's term	8.00

Applications for room reservations accompanied by the full amount of the room rent for the term concerned should be made to Duke University Housing Bureau, Duke Station, Durham, North Carolina. Rooms will be reserved in the order in which applications are received. Notification of assignment to rooms will be made about May 30 for the first term; about July 10 for the second term, if the Summer Session Office can certify admission to the Summer Session Term.

Rooms are available to applicants twenty-four hours prior to the registration for a specific term of the Summer Session. A room is to be vacated by the occupant within twenty-four hours after his final examination. Any period of occupancy other than for a specific term of the Summer Session must be arranged for at the Office of the Housing Bureau, 03 Allen Building.

Refund of Room Rent:

a. When notification for room cancellation is received by the Housing Bureau on or before fifteen (15) days prior to the registration date of the Summer Session term, full room rent will be refunded.

b. When notification for room cancellation is received between the fifteen (15) days prior to registration date and the first four class days, 80% of the room rent will be refunded.

c. When notification for room cancellation is received after the first four days of a Summer Session term, 70% of the room rent for the unused period will be refunded.

Applicants should be sure to express their preference as to roommates, if they have a preference. If no preference of roommate is expressed, the Housing Bureau will assign a roommate; however, the Office does not assume responsibility in this matter.

Estimated cost of one term of Summer Session:

University Fee, 6 s.h.	$129.00
Teachers (elementary and secondary) in full-time service, $60.00	
Dormitory Rooms (2 occupants, $22.50 per person)	22.50
Meals (Cafeteria selective; average per day $2.00)	72.00
Books and Class Materials $7.00 to $10.00	8.50
Miscellaneous (laundry, etc.)	12.00
Total (elementary and secondary teachers in full-time service deduct $69.00)	$244.00

Medical Care

The Student Health Service, in the Duke Medical School Building, operates during the Summer Session and offers exactly the same medical and surgical services available to each full-time student during the academic year, as described completely in the Undergraduate Bulletin,

but covers only *six days* of hospitalization in each term of Summer Session residence.

With the exceptions noted below, this service, under the direction of the University Physician, and with the cooperation of the staff of Duke Hospital, furnishes full medical and surgical care, drugs, dressings, x-ray work, and ward, but not special nursing, for any acute illness or injury at no additional cost beyond the University fee for each term of residence or any shorter period. The cost of braces and necessary Orthopedic appliances and of blood, as well as special nursing, must be borne by the student. A charge for meals ($1.80 per day) will be made while the student is in the hospital. All necessary telephone and telegraph charges will be borne by the student. If students have insurance providing hospitalization, surgical or medical benefits, these benefits shall be applied to the cost of their medical care. Refraction of eyes, treatment of teeth, and of all chronic and pre-existing conditions such as diseased tonsils, hernias, elective surgery, chronic skin conditions, endocrine disturbances, etc., or accidents or illness occurring during vacations or while off the campus are not included in this service.

No illness is treated in dormitory or other rooms occupied by students. Students needing treatment for minor medical or surgical conditions have the facilities of the Student Health Office in the Hospital between 9:00 a. m. and 5:30 p. m. on week-days. Emergency room care is available at night and on Saturday afternoons and Sundays. For admission to the hospital, or for x-ray and consultation services, a student *must* present the 1960 Summer Session Student Identification Card as evidence that he is matriculated in the Summer Session and entitled to hospitalization. Students who register for less than 3 semester hours' credit are not entitled to medical care without charge.

Registration

Definition of Terms

REGISTRATION. A student has completed registration for the Summer Session when:

1. His course program has been written and approved by the dean of the school or college in which he is enrolled or by the Director of the Summer Session in the case of the special or unclassified student.

2. Summer Session forms have been completed properly by the student in the Summer Session Office.

3. Summer Session University fees have been paid.

PRE-ENROLLMENT. The term pre-enrollment refers only to the writing of the course program and its approval by the proper deans or by the Director of the Summer Session in the case of the special or unclassified student. *Pre-enrollment alone does not constitute registration.*

General Registration

CLASSES BEGINNING JUNE 11. All Summer Session students whose classes begin on June 11, Term I, who *do not* complete registration in the Summer Session Office, 119 Allen Building, on or before June 4 *must* present themselves at general registration in the new gymnasium on June 10 to register. Students will register during 30-minute periods alphabetically according to *surname* as indicated in the following table.

Time	*Registrants (Surname)*
8:30– 9:00	A–B
9:00– 9:30	C–E
9:30–10:00	F–H
10:00–10:30	I–L
10:30–11:00	Mc–N
11:00–11:30	O–P
11:30–12:00	Q–R
12:00–12:30	S–T
12:30– 1:00	U–Z

CLASSES BEGINNING JUNE 20. All Summer Session students whose classes begin on June 20, Term I, must complete registration in the Summer Session Office, 119 Allen Building, on or before June 18.

CLASSES BEGINNING JULY 18. All Summer Session students who wish to register for courses offered during Term II or for research during Term II may register in the Summer Session Office on July 6 through July 14. All students who *do not* register for second term during this period *must* register in Central Records Office, 103 Allen Building, on July 16, between 8:30 and 1 p.m.

CLASSES BEGINNING ON OTHER DATES. All Summer Session students registering for courses beginning on dates other than those specified above must complete registration in the Summer Session Office *before* the date on which their classes begin. *Registration on the day on which classes are scheduled to begin will be considered late registration.*

Late Registration

Any student who fails to register on or before the dates specified in the preceding paragraphs will be charged a fee of $5.00 for late registration. No student will be permitted to register for a 3 semester hour course after the third class day (June 14, Term I; July 20, Term II); a 4 semester hour course after the second class day (June 21, Term I; July 19, Term II). Changes in courses other than those required by the University will require a payment of $1.00 for each change made. All changes must be approved by the dean of the school or college in which the student is enrolled or, in the case of the special or unclassified student, by the Director of the Summer Session. These registration rules are enforced rigidly.

Since Summer Session courses present a program of study in more concentrated and rapid form than in the regular semesters, students are advised to register on time and to be present at all class sessions.

Advance Registration

STUDENTS IN RESIDENCE AT DUKE UNIVERSITY DURING THE SPRING SEMESTER 1960.

WRITING COURSE PROGRAMS IN THE SCHOOLS AND COLLEGES. Students in residence at Duke University during the Spring Semester 1960, both graduate and undergraduate, who plan to enroll for courses offered in the 1960 Summer Session or to carry on research during the

period of the Summer Session will write course programs and have them approved in their respective schools or colleges on the dates specified below:

Trinity College

April 19-April 20—rising seniors
April 21-April 22—rising juniors
April 25-April 27—freshmen and rising sophomores

College of Engineering

April 18—rising seniors
April 20—rising juniors
April 26—rising sophomores

Woman's College

April 19-April 20—rising seniors
April 21-April 22—rising juniors
April 25-April 27—rising sophomores

The School of Nursing

April 19-April 20—rising seniors
April 21-April 22—rising juniors
April 25-April 27—freshmen and rising sophomores

The Divinity School

April 28-April 29—all students planning to attend the Summer Session

The Graduate School of Arts and Sciences

May 3-May 4—all students planning to attend the Summer Session

Advance Registration in the Summer Session Office.—Students in residence whose course programs have been written and approved by their respective colleges on the dates indicated above may complete their registration in the Summer Session Office, 119 Allen Building, on the following dates:

Graduate students	May 3 through May 4
Undergraduate students	May 16 through June 4

Registration in the Summer Session Office includes:

1. Completion of various Summer Session forms.
2. Payment of University fees.

A student who registers with the Summer Session Office during this period will not be required to be present at general registration on June 10. He will begin his class work on the date his classes are scheduled to begin: June 11 or June 20.

STUDENTS NOT IN RESIDENCE AT DUKE UNIVERSITY DURING THE SPRING SEMESTER 1960.

ADVANCE REGISTRATION BY MAIL. Students not in residence at Duke University during the Spring Semester 1960—new undergraduate students seeking to enter as degree candidates, graduate students who are not candidates for an advanced degree at Duke University, graduate and undergraduate students of other colleges and universities desiring to earn credits for transfer, public school teachers and college teachers (not advanced degree candidates)—may register by mail. Advance registration by mail includes:

1. Completion in full of the application form at the end of this *Bulletin*.

2. Admission to the Summer Session by the Director of the Summer Session and, in the case of students seeking to enter Duke University as degree candidates, admission by the dean to the school or college of Duke University concerned.

3. Completion in full and return of forms required by the Summer Session Office by June 4.

4. Payment of University fees by June 4. A student may *pre-enroll* by mail without paying the University fees but he *cannot register in advance* without doing so.

Students who complete registration by mail on or before June 4 need not be present at the general registration on June 10.

DEGREE CANDIDATE GRADUATE STUDENTS NOT IN RESIDENCE DURING THE SPRING SEMESTER 1960. All graduate students not in residence during the Spring Semester 1960 who are candidates for an advanced degree in the Graduate School of Arts and Sciences of Duke University *must* present themselves for registration at the gymnasium on June 10. They cannot complete registration by mail because:

1. Their program of study for the summer must be approved by their Director of Graduate Studies.

2. Their course programs must be written and approved by the Graduate School of Arts and Sciences.

These students may pre-enroll by mail with the Summer Session Office and may pay their fees in advance, but they cannot complete their registration.

Academic Regulations

Kinds of Course Enrollment

SUMMER SESSION courses may be taken for "credit" or for "non-credit" or may be "audited." A student's program may be exclusively in one of these categories, or may combine any two of them or all three. Students taking a full or partial program for "credit" may enroll as auditors or as non-credit students in any number of additional courses.

CREDIT. The Summer Session term "credit" does not mean degree credit at Duke University unless the student has been admitted as a degree candidate by one of the colleges or schools of the University. A student taking a course for credit is expected to do all the work required and to take the final examination, and he will receive a grade. G.I. Bill benefits are available only to those veterans who enroll for credit.

NON-CREDIT. "Non-credit" enrollment is available to the student who wishes the privilege of participating in class discussions, exercises, and laboratory assignments but does not wish to take the examinations either mid-term or final. A "non-credit" student may do as much of the work of the course as he desires, but he may not take the final examination and he will not receive a grade. Full fees of $21.50 per semester hour are required in "non-credit" enrollment.

AUDIT. An auditor is entitled to listen to lectures and class discussions, but he may not participate in discussions or take examinations. Students may not enroll as auditors in laboratory courses. A student carrying a full program for credit may be given permission to audit as many courses as he desires without additional fees. Students carrying less than a full program for credit may secure permission to audit but are required to pay the auditing fee of $10.75 per semester hour.

Eligibility for Course Enrollment

Courses numbered 1-49 are primarily for freshmen, or freshmen and sophomores. Courses numbered 50-99 are ordinarily for sophomores, or sophomores and juniors. Courses numbered 100-199 are designed

for juniors and seniors. Courses numbered 200-299 are planned for seniors and graduates. Courses numbered 300 up admit graduate students only. Courses numbered from 200 up are limited in enrollment to 25 students.

Credits Allowed in Summer

The Summer Session courses are of the same quality and credit value as courses in the regular semester. Credit earned in the Summer Session is in terms of semester hours. The majority of Summer Session courses carry 3 semester hours' credit and require one term in residence. A limited number of basic courses in the sciences carry 4 s.h. credit (Chemistry, Geology, Physics, Zoology). Some introductory foreign language courses are given on an intensive basis. A 3 s.h. course in these introductory language courses will constitute the student's full load for half of the term.

The Normal Course Program

The normal and maximum program for one term of the Summer Session is 6 semester hours. The 4 semester hour courses in the sciences run for four weeks and one such course constitutes a full course program. Four semester hour courses do not meet on Saturdays.

Grading

Only a student taking a course for credit will receive a grade. The grade given represents the quality of the work done in the course.

PASSED.

Undergraduate Grades	*Graduate Grades*
A—excellent	E—exceptional
B—good	G—good
C—average	S—satisfactory
D—poor but passing	

FAILED. A grade of F indicates that the student has failed the course, and in order to receive credit for the course he must repeat the work in class.

INCOMPLETE. A grade of I may be reported by the instructor if for any reason he is unable to report the final grade at the regular time. Incomplete courses must be completed before the close of the succeeding semester; otherwise the I is recorded as F, and the course must be repeated in class if the student is to receive credit for it.

ABSENT FROM FINAL EXAMINATION. The grade X indicates that the sudent was absent from the regularly scheduled examination. A student absent from examination, if the absence has been excused by the dean of the college or school in which he is enrolled or, in the case of the special or unclassified student, by the Director of the Summer Session, may receive an examination upon the payment of $3 to the Treasurer of the University. The instructor concerned arranges for the examination in cases where absences are excused. A student with an X grade who has not obtained a passing grade before the end of the semester following that in which the X was incurred is regarded as having failed in the course concerned and must repeat the work in class in order to receive credit. If a student's absence from an examination is not excused by the dean of the college or school in which he is enrolled or, in the case of the special or unclassified student, by the Director of the Summer Session, his grade for the course concerned is recorded as F.

Dropping of Courses

If a student drops a course without permission from the dean of the school or college in which he is enrolled or, in the case of the special or unclassified student, the Director of the Summer Session, the grade for that course is recorded as F. If he drops a course with permission, the grade for that course is F unless, in the judgment of the dean or director, circumstances do not justify this penalty.

Withdrawal from the Summer Session

If a student wishes to withdraw from the Summer Session, he must notify both the dean of the school or college in which he is registered and the Director of the Summer Session.

Absences

An undergraduate student who incurs more than three absences in a course (whether excused or unexcused) is ordinarily debarred from the course. Should he be permitted to remain in the course full credit will not be allowed. The amount of reduced credit will be determined by the Director of the Summer Session. Days missed through late registration are counted as absences, and three tardies in a given course are counted as one absence. (In three and four-week courses an absence of one day will count as two absences.)

An undergraduate degree candidate in Duke University who incurs more than three absences in a course must confer immediately with

the Dean of his or her college, who in turn will recommend to the Director of the Summer Session whether the student may continue in the course. A special or unclassified student who incurs more than three absences in a course must confer immediately with the Director of the Summer Session who will determine whether the student may continue in the course.

Examinations

Final examinations in courses are held on the two last days of each term. Final examinations for short courses which occupy the student's complete program will be held on the last day of the course. The examination dates for 1960 are:

First term: July 14-15.

Second term: August 19-20.

Courses in science for the first term have been scheduled so that their final examination will come on July 15. The science courses which begin July 18 and run for four weeks will have their final examination on August 12. The University has no provision for giving examinations *in absentia*. Students absent from examinations for valid reasons are permitted a liberal extension of time to return to the University for completion of credit.

Credits for Transfer

A student desiring either graduate or undergraduate credits transferred from Duke University to his university or college as degree credit must request from the Director of the Summer Session, Duke University, a "Course Approval Form" to be completed by the student's Dean or Registrar and returned to the Director of the Summer Session, Duke University.

Professional Credits Toward Teachers' Certificates

Professional credits toward teachers' certificates are granted by the various state boards of education, each in accordance with its own carefully planned rules. Teachers in service, before enrolling for certification credit, should consult the rules laid down by their State Board of Education. If necessary, they should send to their State Board of Education a list of the courses in which they plan to enroll and inquire whether these will be acceptable for certification credit.

University Services, Publications, and Student Activities

Appointments Office

THE APPOINTMENTS OFFICE is maintained in Page Building the year around. The services of this Office are available without charge to students and teachers registered for a degree in Duke University and to school officials who may be seeking the services of new teachers. Students interested in securing employment through the Appointments Office should register with this Office.

The Bureau of Testing and Guidance

The University maintains a Bureau of Testing and Guidance which provides a centralized program of educational, vocational, and personal counseling for students. In addition, the Bureau administers special group testing programs for University schools and departments and serves as the local testing center for a wide variety of national testing programs. The Bureau also carries on programs of research in the field of measurement and counseling. Although the counseling, testing, and research services of the Bureau are designed primarily to meet the needs of the students, the faculty, and the staff of Duke University, these services are made available to individuals and organizations outside the University as its facilities permit. Requests for further information should be addressed to the Director, Bureau of Testing and Guidance, Duke Station, Durham, North Carolina.

Post-Doctoral Research

Scholars engaged in post-doctoral research find it advantageous and sometimes essential to use in summer the resources of the Duke University libraries. The University welcomes these visitors and makes available to them the living accommodations of the dormitories and the dining halls during the Summer Session, June 10 to August 20. Application for these post-doctoral research privileges must be made in advance by letter to the Director of the Summer Session, giving the applicant's present position, the specific field of his research interest,

and the dates during which he desires to be in residence. Approved applicants will be accepted subject to the availability of library and of dormitory space.

The Sundial

During the Summer Session the University will publish each Saturday *The Sundial,* an official calendar announcing events—academic, social and recreational—of the following week. This calendar also includes official notices concerning academic requirements. Students are expected therefore to read *The Sundial* regularly.

Recreation and Social Activities

The Summer Session will provide a varied program of entertainment and recreation. These plans include movies, presented once weekly by Quadrangle Pictures; weekly summer dances and open house social evenings with games for those who do not care to dance. Tours to areas of interest can be arranged for week-ends. Both the mountains and the seashore are easily accessible. Adequate facilities are available for those interested in swimming, tennis, and other sports. State clubs organized for the summer play an active part in all social activities.

Resources of the University

THE UNIVERSITY LIBRARIES, with 1,400,000 volumes and 2,725,000 manuscripts, provide exceptional resources and facilities for study and research by undergraduate and graduate students and visiting scholars. About 50,000 volumes are added annually, while one hundred foreign and domestic newspapers and 5,100 periodicals are received currently. There is also a large collection of microfilms of rare books, newspapers, and periodicals. Study facilities are provided for 269 graduate students in the air conditioned stacks of the General Library.

All libraries of the University are open for use throughout the summer. A "Student's Guide to the General Library," and a brochure on "The Library of Duke University" which describes the building and collections in general detail are available on request addressed to the Librarian of the University.

The laboratories in the various Science Departments (Botany, Chemistry, Physics, Psychology, and Zoology) are designed for both teaching and research. Ideal locations for special work in some of the sciences are available at Duke University Marine Laboratory at Beaufort, North Carolina; at Highlands Biological Laboratory at Highlands, North Carolina; in the Duke Forest at Durham, North Carolina; and in the Sarah P. Duke Gardens on the West Campus of Duke University.

The Chapel, home of Duke University Church, interdenominational, is open all summer. The church encourages the cultivation of the spiritual and moral life of students through participation in the service of worship which is held each Sunday morning at eleven o'clock. The pulpit is occupied by a regular University Preacher, or a special visiting preacher. Choral music for these services is provided by a volunteer student choir.

Organ recitals are presented periodically by the University Organist, and Carillon recitals twice a week, on Sunday afternoon and Thursday evening, by the University Carillonneur.

Special Conferences and Courses

SPECIAL PROGRAMS FOR TEACHERS OF SCIENCE AND MATHEMATICS: In place of the annual Laboratory Conference for Teachers of Science and Mathematics, it is anticipated that the Summer Session will offer a number of special programs at the graduate level designed specifically for high school teachers in these fields. For detailed information on the programs, teachers should write The Director of the Summer Session, Duke University, Durham, North Carolina.

CONFERENCE ON ELEMENTARY EDUCATION: June 16-17, 1960. This conference is the sixth of a series of conferences dealing with various areas of learning in the elementary school. The area of learning to be considered in this conference will be science.

The general theme of the conference will be "The Improvement of Science Instruction in the Elementary School," with some special consideration devoted to topics in *astronomy* for the elementary school.

Dr. Myron Atkin, University of Illinois, will be the chief consultant for the Conference. He is a recognized authority in the field of the teaching of science in the elementary school.

For further information write to the Director of the Summer Session, Duke University, Durham, North Carolina.

CONFERENCE ON SCHOOL LAW: A conference on school law will be held on Duke University Campus on June 28-29. The program is planned for the benefit of administrators and teachers in schools and colleges. Speakers and consultants well known in the field of school law will participate in the two-day conference.

RESEARCH CONFERENCE ON CHRISTIANITY AND POLITICS: The Lilly Endowment Research Program of the Department of Political Science in cooperation with the Graduate Department of Religion will conduct a research conference for a selected and invited group of post-doctoral fellows from June 13 through July 23.

THE SCHOOL FOR APPROVED SUPPLY PASTORS: The twelfth session of the short term school for supply pastors and traveling preachers taking the Conference Course of Study will be conducted by the Divinity School in cooperation with the Department of In-Service Training of the Methodist Church during the period, July 18-August 12, 1960.

The curriculum as described in the 1956 Discipline of the Methodist Church will be followed, and the Introductory Studies and the studies for the First and Third Years will be offered. The Studies for the Second and Fourth Years will be offered again in 1961. It is required that a student read all the textbooks for his particular year before coming to school.

Registration day will be July 18, and classes will begin on the morning of July 19. Classes will end soon after noon, August 12. In addition to the class work, daily chapel services will be conducted, a varied program of athletics will be supervised by the University Department of Physical Education, and a number of special lectures and workshops will be arranged.

SUMMER COMPUTER INSTITUTE FOR COLLEGE TEACHERS OF MATHEMATICES: June 13-July 22. Duke University in cooperation with the National Science Foundation will offer a Summer Computer Institute during the period June 13-July 22, 1960, for college teachers of mathematics. The objective of the Institute is to give participants a background in the theory, operation, and application of the digital computer. The facilities of the University computing Laboratory, which is equipped with an IBM 650, will be available for the Institute. Visiting lecturers, eminent in machine theory, construction, and application, will be invited to address the group. For application forms and information write the Chairman of the Department of Mathematics, Duke University, Durham, North Carolina.

A SPECIAL PROGRAM IN MATHEMATICS FOR RETIRED ARMED SERVICES OFFICERS: Duke University is offering a special program leading to the degree of Master of Arts in Teaching. The program is designed for retired Armed Services officers who desire to prepare themselves for teaching mathematics in the secondary schools or elementary mathematics in the colleges. The applicant should hold the bachelor degree and should have completed mathematics through calculus. The program will provide review in mathematics, specially designed courses in mathematics, teaching experience, and work in education. Initial session of the 1960-61 Retired Armed Services Officers Training Program will be from July 18 to September 16, 1960.

HIGHLANDS BIOLOGICAL STATION: Duke University holds a subscribing instructional membership in the Highlands Biological Station at Highlands, North Carolina, on the southern edge of the Blue Ridge Mountains at an elevation of 4,118 feet. The situation and the region offer an excellent opportunity for field studies and limited laboratory work. A limited number of qualified students in Botany and Zoology may make arrangements to carry out research at this station.

MEDICAL MYCOLOGY: A month's course in Medical Mycology, under the direction of Dr. Norman F. Conant, is to be offered at Duke University School of Medicine and Duke Hospital, June 28 to July 24, 1960. The course will be offered every day in the week, except Sunday, and has been designed to insure a working knowledge of the human pathogenic fungi within the time allotted.

Emphasis will be placed on the practical aspects of the laboratory as an aid in helping establish a diagnosis of fungus infection. Insofar as possible and as patients become available, methods of collecting materials in the clinic for study and culture will be stressed. Work with patients, clinical material, cultures and laboratory animals will serve as a basis for this course. Also, an opportunity to study pathologic material, gross and microscopic, will be given those whose previous training would allow them to obtain the greatest benefit from a study of such material.

The enrollment for the course will be limited and the applications will be considered in the order in which they are received. An attempt will be made, however, to select students on the basis of their previous training and their stated need for this type of work.

A fee of $100.00 will be charged for this course, upon the completion of which a suitable certificate will be awarded. Please direct inquiries to Dr. Norman F. Conant, Professor of Mycology, Duke University School of Medicine, Durham, North Carolina.

Graduate Study in the Summer Session

Summer Sessions offer an excellent opportunity to advance or complete programs of graduate study already undertaken, to begin study toward a graduate degree at Duke University, to acquire graduate training useful in professional advancement, or to study for personal satisfaction. The several departments offer a variety of graduate courses, as listed in later pages, given by members of the Duke faculty and visiting professors. Especially full programs are provided in Botany, Education, English, History, Psychology, Sociology, and Zoology.

Students Not Seeking Admission to the Graduate School. Any student who holds an A.B. or B.S. degree and who does not intend to earn an advanced degree at Duke University but who desires graduate work for professional or other reasons should apply to the Director of the Summer Session for admission as an unclassified student. Credit earned by an unclassified student will serve all usual purposes except that it will not count toward an advanced degree at Duke University.

Students Seeking Admission to the Graduate School. Admission may be granted to a student who has received an A.B. or B.S. degree from an accredited institution after a four-year course of study. The undergraduate record should be well rounded and of such quality as to give evidence of real capacity for success in graduate study. A student who seeks admission should 1) secure an application blank and promptly return it with the required information, 2) have mailed directly from the registrar of each college he has attended to the Dean of the Graduate School at Duke University an official transcript of all his undergraduate or graduate work, 3) have mailed to the same official at least two letters of recommendation from persons best qualified to appraise his capacity for graduate study.

In addition, many departments welcome, the departments of Economics and Psychology strongly advise, and the department of Biochemistry requires submission of scores on the aptitude and advanced test in major subject of the Graduate Record Examination. If possible, the student should take this examination before his intended registration. Arrangements can usually be made through officials at the

student's college or by correspondence with the Educational Testing Service, 20 Nassau Street, Princeton, New Jersey. Should a student be unable to take the examination before the final admission date, he may—if his other documents are acceptable—be granted "provisional" admission until he takes the examination, which he must arrange to take at the first time it is offered after his "provisional" admission. Students admitted to the Graduate School will be so notified by the Director of Admissions.

So that applications for admission to the Graduate School for summer work may be given full consideration, the student should submit all required documents to the Dean of the Graduate School at least ONE MONTH before the date of intended registration. No student may register with the Graduate School until his application has been completed and admission has been granted.

Registration of Graduate Students

Graduate students in residence during the spring semester will pre-register for either or both terms of the Summer Session on May 3-4. Other students who have been admitted to the Graduate School should present themselves for registration at the official registration period, June 10 for the first term, and July 16 for the second term. They are required to register both with the Summer Session and the Graduate School.

The Ph.D. and Ed.D. Degrees

Study for the Ph.D. Degree: Students who are interested in working toward a Ph.D. degree should note in detail the requirements as outlined in the *Bulletin* of the Graduate School of Arts and Sciences. Of the two years required as minimum residence, not more than one year can be earned in Summer Sessions. Full-time enrollment for one term of the Summer Session is counted as one-fifth of an academic year.

Study for the Ed.D. Degree: Students who are interested in working toward an Ed.D. degree should consult the detailed statement in the *Bulletin* of the Graduate School of Arts and Sciences. Requests for specific information regarding residence and programs for the Ed.D. degree should be sent to the Director of Graduate Studies, Department of Education.

Requirements for the Master of Arts Degree

Language Requirements: The candidate for the A.M. degree must have a reading knowledge of at least one foreign language. (The several departments reserve the right to specify which foreign languages

are acceptable.) The language requirement may be satisfied in either of two ways: (1) by successfully passing an examination, officially conducted by the appropriate foreign language department at Duke University, or (2) by a transcript showing the completion of the third college year of one language or the second college year of each of two acceptable foreign languages.

Major and Minor Subjects: As a prerequisite to graduate study in his major subject, the student must have completed a *minimum* of 12 semester hours of approved college courses in that subject, and 12 additional semester hours in that subject or in related work. Since some departments have specific requirements for undergraduate preparation, the student should read carefully the special requirements listed by his major department, which are included as headnotes to the course offerings in the *Bulletin* of the Graduate School.

To complete the course requirements for the A.M. degree, the student must take 24 units of graduate courses, of which at least 12 must be in the major subject. Of the remaining 12 he must take 6 units of course work in a minor subject, leaving 6 units of course work to be taken in either the major or minor field, or in another field approved by the major department and the Dean of the Graduate School. In addition to the course work, the student must present a thesis which carries a credit of 6 units. Thus, the total credit required for the A.M. degree amounts to 30 units.

The Thesis for the Master of Arts Degree: The thesis for the A.M. degree should demonstrate the student's ability to collect, arrange, interpret or report pertinent material on his special research problem. Although a publishable document is not required, the thesis must be written in a literate style, and should exhibit the student's competence in scholarly methods and procedures.

Regulations and Procedures: Students expecting to complete all requirements for a Master's degree should file with the Graduate School Office *not less than one month* prior to first presentation of the thesis a declaration of intention to receive degree and a thesis title. Candidates completing requirements for a Master's degree without thesis should file the same official blank *one month* prior to completion of all degree requirements. Official blanks may be obtained from the Graduate Office or from the Director of Graduate Studies in the student's major department.

Four bound, typewritten copies of the thesis must be submitted, in approved form, to the Dean of the Graduate School at least *three to five days* before the date of the thesis examination. The copies will then be distributed to the several members of the examining committee.

The Examining Committee and the Examination: After consulta-

tion with the professor who has directed the thesis work, the Director of Graduate Studies in the major department appoints an examining committee composed of the director of the thesis as chairman and two other members of the graduate faculty, one of whom should represent the minor department. The committee composition is subject to approval by the Dean of the Graduate School. The candidate appears before this committee for an examination, which lasts for about one and one-half hours. The subject matter covered in the examination is usually restricted to the thesis and to the major field.

If the candidate passes his examination, the examining committee certifies to this fact by signing the title page of the thesis. The candidate then returns the original and one carbon copy of the thesis to the Dean of the Graduate School for deposit in the University Library.

Requirements for the Master of Education Degree

Prerequisites: The degree of Master of Education is granted ordinarily only to teachers or to others engaged in educational work.

Before a student is admitted to graduate study for this degree, he should have completed, on the undergraduate level, a minimum of 18 semester hours of approved work in Education.

Requirements for the Degree: The M.Ed. degree may be earned either with or without the presentation of a thesis.

Without Thesis: The required work includes a departmental major (Elementary Education, School Administration and Supervision, or Secondary Education) of at least 12 units, and a minor of at least 6 units outside the Department of Education. The remaining 12 units are elective within the area of Education and the minor field, but require the approval of the student's major adviser and the Director of Graduate Studies.

Toward the end of his residence the student must pass a comprehensive examination on his departmental major. Permission to take such examinations must be obtained from the Director of Graduate Studies of the Department of Education, and a notice of intention must be filed with him *at least two weeks* before the announced dates of the examinations.

With Thesis: Students who elect this plan are permitted to substitute a thesis for 6 units of the required course work. The thesis subject must be approved by the professor who is to direct it, and by the Director of Graduate Studies. Students expecting to complete all requirements for a Master of Education degree should file with the Graduate School Office *not less than one month* prior to first presentation of the thesis a declaration of intention to receive degree and a thesis title. Official blanks may be obtained from the

Graduate Office or from the Director of Graduate Studies in the Department of Education.

In addition to the thesis, the student must present at least 24 units of course credit. Of these, 12 units must be taken in the student's departmental major. Six units, constituting a minor, must be taken outside of the Department of Education. The remaining 6 units are elective within the area of Education and the minor field, but require the approval of the student's major adviser and the Director of Graduate Studies.

The regulations concerning the writing and submission of the thesis, and the examination of it, are the same as those governing the thesis for the Master of Arts degree.

The Master of Arts in Teaching Degree

Prerequisites: The degree of Master of Arts in Teaching is designed for teachers already in service and for recent graduates of liberal arts colleges who wish to enter public school teaching.

A student should normally have completed a minimum of 12 semester hours in his proposed major subject and an additional 12 semester hours in that or related subjects. In the event that a student wishes to undertake a graduate major different from the undergraduate major, the prerequisites may be modified upon the recommendation of the student's committee and the approval of the Dean of the Graduate School.

Programs for the Degree: One of two programs may be arranged, in consultation with the student's committee:

A. A major in Education of 18 to 24 units and 6 to 12 units in courses outside the Department of Education.

B. A major in a department other than Education of 18 to 24 units and 6 to 12 units in Education.

In both programs a minimum of 30 units is required.

The non-education courses are to be taken in one or more subjects ordinarily taught in the secondary schools. The amount and distribution of this work will be determined by the needs of the individual student.

The Master of Arts in Teaching may be earned with or without the presentation of a thesis. If a student, in consultation with his committee, elects to present a thesis, 6 units of the total of 30 units required will be allotted to thesis research. He will then be required to complete 24 units of course credits. The regulations concerning the writing and submission of the thesis, and the examination on it, are the same as those governing the thesis for the Master of Arts degree. Candidates for the Master of Arts in Teaching who have

not had teaching experience are required to take Education 215 (or 315) and 216 in which case a minimum of 36 units is required.

The Committee: Each candidate for the degree will be assigned a committee, appointed by the Director of Graduate Studies in his major department, to plan his program of study.

This committee will consist of three members, at least one of whom will be from the Department of Education, and at least one from another department. The chairman of the committee will normally be chosen from the department of the major.

Cooperative Program in Teacher Education

Forty selected graduates of liberal arts colleges who desire to prepare for high school teaching will be admitted to a special internship program at Duke University. Supported by a grant from the Ford Foundation, this program is designed to prepare for a teaching career selected college gradnates who did not qualify professionally for teacher certification as undergraduates. The Cooperative Program provides, for candidates who are chosen, graduate study in their special fields, professional courses, and carefully supervised observation and teaching experience. One who completes the program successfully can achieve within a period of fifteen months a year of teaching experience, a Master of Arts in Teaching degree and full certification as a teacher. A few half-year interns can be accepted.

Candidates will begin the program at the opening of the summer session of 1960 and complete it in August of 1961. They will spend the summer preceding and the summer following the year of teaching in residence at the University. During the school year 1960-1961 interns will be employed as regular teachers in a cooperating public school system. During this year they will receive full salary and will work under the joint supervision of the cooperating public school and the University. The program will meet training qualifications for the advanced, or graduate, teacher's certificate in most states.

The salary for the year of teaching will, in effect, constitute a substantial award to candidates selected for the program. The grant from the Ford Foundation will provide tuition for the first summer session and the fall semester. Thereafter full-year interns will benefit from Duke University's special tuition rate for teachers. Half-year interns will pay tuition as regular full time students in the Graduate School during the second semester of the school year, but they will omit the second summer session and complete the program in June. Applicants will be considered, as are candidates for other awards, on a competitive basis. The best-qualified applicants will be chosen on the basis of undergradnate record, recommendations, and evidence

of interest in becoming high school teachers. Applicants are required to arrange interviews in connection with their applications. Application forms may be secured by addressing a request to the Dean of the Graduate School not later than March 1, 1960. Details concerning the program can be obtained by writing the Director, Cooperative Program in Teacher Education, Department of Education, Duke University.

Requirements for the Master of Science Degree

Prerequisites: The degree of Master of Science is offered in the fields of Civil, Electrical, and Mechanical Engineering. As prerequisites to this degree the student must have earned a Bachelor's degree from an accredited engineering college and have completed a minimum of 12 semester hours work in the major field.

Foreign Language: There is no foreign language requirement for this degree.

Major and Minor Subjects: The work for the Master of Science degree is designed to provide a broad basic foundation in the science of civil, electrical, and mechanical engineering. The student must present acceptable marks for a minimum of 24 units of graduate courses. Of these, at least 12 units must be in the major subject. He must also take a minimum of 12 units of minor work in the Departments of Mathematics, and Physics or Chemistry. In addition to these he must present a thesis, which carries a credit of 6 units. Thus his earned credit for the degree totals a minimum of 30 units.

Regulations and Procedures: The regulations and procedures and the provisions for examination and an examining committee are the same as those for the Master of Arts degree.

Candidacy for the Master's Degree

To be considered as a candidate for a Master's degree (A.M., M.S., M.Ed., M.A.T.) the graduate student must (1) have made passing grades in all courses taken during the first period of residence (if he registers for fewer than 12 units of graduate courses during the first period of residence, he must make passing grades on the initial 12 units of graduate courses), (2) have made a grade of "G" or "E" on at least 3 units of this work, and (3) have received the approval of the major department (or in the case of the M.A.T. of the supervisory committee).

Transfer of Credits

Under certain circumstances a maximum credit of 6 semester hours may be allowed for graduate courses completed elsewhere. Approval for the transfer of credits will not be given until the student has spent one semester in residence. The acceptance of credit up to this amount will not reduce the minimum period of full-time registered residence at Duke University. In no case will credit be allowed for extension or correspondence courses.

With the approval of both the student's major department and the Dean of the Graduate School, a student who is granted such transfer for credit may be permitted to register for as much as 12 units for thesis research instead of the usual 6 units. Or he may be permitted to fill out his schedule with as much as 6 semester hours of further undergraduate training or 6 semester hours of required language courses on the undergraduate level.

Time Limits for Completion of the Master's Degree

The candidate for a Master's degree who is in residence for consecutive academic years should complete all requirements for the degree within two calendar years from the date of his first registration in the Graduate School. Any candidate must complete all requirements within six calendar years of his first registration.

Undergraduate Study

UNDERGRADUATES in Duke University who desire to accelerate their programs may complete the work for a degree in three years by attending two and one-half summer sessions. By attending both terms of the Summer Session it is possible for a student to earn as many as twelve semester hours of credit. Instruction of interest to undergraduates will be offered in the summer of 1960 in most of the departments and colleges.

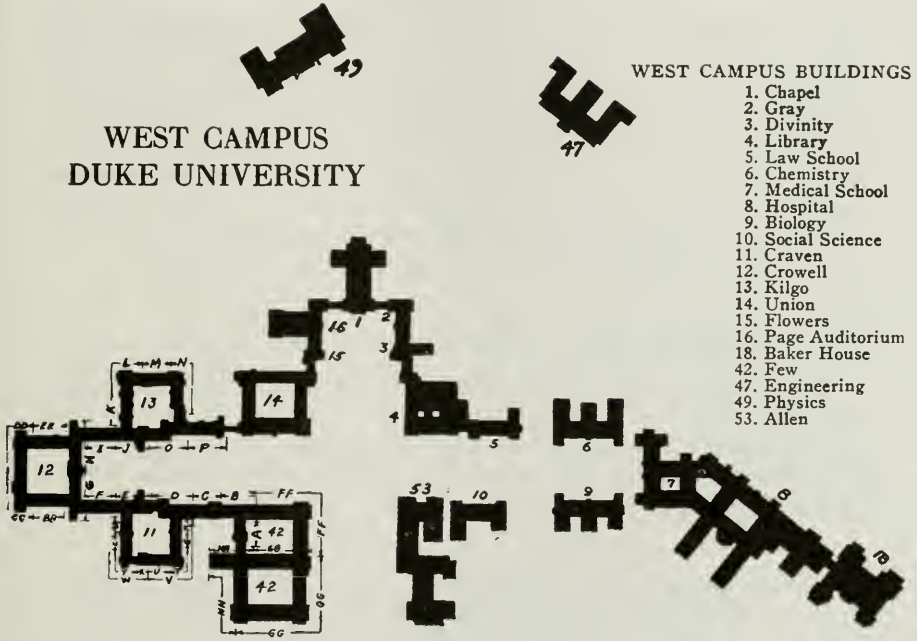
Undergraduates from other colleges and universities may enroll for summer instruction at Duke and transfer their earned credits to their own institutions.

School of Nursing

The programs of the School of Nursing include courses in the Summer Session. Persons desiring to enroll in courses to meet the requirements of the School of Nursing programs must be regularly enrolled students. Students who have been admitted with Advanced Standing and who may wish to make up deficiences in the Summer Session must have courses approved by the School of Nursing. Information about required courses is published in the regular Bulletin of the School of Nursing. For further information write to the Dean of the School of Nursing, Hanes House, Duke University, Durham, North Carolina.

Divinity School Studies

BACHELOR OF DIVINITY AND MASTER OF RELIGIOUS EDUCATION: The degrees of Bachelor of Divinity and Master of Religious Education are administered by the faculty of the Divinity School. A limited number of courses carrying credits toward these degrees is listed in this *Bulletin* under the heading of Religion. Persons desiring credit toward either of these degrees must be regularly admitted to the Divinity School, and all courses listed for Divinity School credit must be registered and approved in the office of the Divinity School. This school publishes its own Summer Session Bulletin, a copy of which may be secured by addressing The Office of the Dean, The Divinity School, Duke Station, Durham, North Carolina.



CLASSROOM ASSIGNMENTS

On registration days all students should consult *The Sundial* for room assignments for all classes and for changes in the course program announced in this ***Bulletin.***

Courses of Instruction

Minimum Enrollment Required for Courses

ALL courses are offered subject to minimum enrollments. The University reserves the right to withdraw undergraduate courses in which fewer than twelve students enroll, senior-graduate courses numbered 200-299 in which fewer than ten students enroll, and graduate courses and seminars numbered 300 or above in which fewer than six students enroll. In withdrawing a course, the University attempts to avoid undue hardships on students. Sometimes, therefore, courses are offered in spite of small enrollments. Courses not listed will be given when a demand develops and an instructor is available.

Department Officers and Regulations

Departments offering Summer Session programs are listed alphabetically. Under each department is given the name of the chairman and the name of the director of graduate studies. Where departments have set up special regulations for admission to candidacy for the Master's degree, these are included.

BOTANY

PROFESSOR HENRY J. OOSTING, CHAIRMAN—102 BIOLOGY BUILDING (WEST CAMPUS);
PROFESSOR PAUL J. KRAMER, DIRECTOR OF GRADUATE STUDIES—
04 BIOLOGY BUILDING (WEST CAMPUS)

Students admitted to candidacy for an advanced degree in Botany should have completed a minimum of 12 semester hours of courses in botany (or biology) beyond an elementary course, and related work in biological sciences. Students who have not yet had the minimum hours, however, may enter higher courses by permission of the instructor, if he is convinced that they can carry the work for undergraduate credit, and may count such work toward hours necessary for candidacy.

FIRST TERM

208. BOTANY FOR TEACHERS.—This course will provide teachers of all grades with outdoor and indoor experience in using plants and plant materials. Field work will stress the recognition of plants in their native habitats and the collecting of material for classroom use. The lecture and laboratory will emphasize designing simple demonstrations, experiments, and exhibits to illustrate the fundamental botanical principles of growth, water and food relations, structure, reproduction, and heredity. Teachers may collect and preserve materials for use in their schools. (Prerequisite: one year of a natural science.) 8:00-12:00; 2:00-4:00. June 10-June 27. 3 s.h. MISS KEEVER

225. SPECIAL PROBLEMS.—Hours to be arranged. STAFF

359. RESEARCH.—Hours to be arranged. STAFF

FIRST TERM (Marine Laboratory, Beaufort, North Carolina)

211. MARINE ALGAE.—Classification, taxonomy, morphology, distribution, ecology, and economic uses of marine algae; preparation of herbarium material. In addition to collection, field work will provide students an opportunity to observe associations of marine algae *in situ* by means of diving equipment, if they wish to use it. 6 s.h. MR. HUMM

225. SPECIAL PROBLEMS.—Hours to be arranged. MR. JOHNSON

359. RESEARCH.—Hours to be arranged. MR. JOHNSON

SECOND TERM

225. SPECIAL PROBLEMS.—Hours to be arranged. STAFF

359. RESEARCH.—Hours to be arranged. STAFF

SECOND TERM (Duke Marine Laboratory, Beaufort, North Carolina)

225. SPECIAL PROBLEMS.—Hours to be arranged. MR. JOHNSON

359. RESEARCH.—Hours to be arranged. MR. JOHNSON

CHEMISTRY

PROFESSOR J. H. SAYLOR, CHAIRMAN—115 CHEMISTRY BUILDING (WEST CAMPUS);
PROFESSOR CHARLES K. BRADSHER, DIRECTOR OF GRADUATE STUDIES—
124 CHEMISTRY BUILDING (WEST CAMPUS)

All classes in Chemistry, Term I, will begin on June 20 and continue through July 15. All classes in Chemistry, Term II, will begin on July 18 and continue through August 12. Students who wish to avoid paying a late registration fee must have their registration completed in advance of these dates. For registration dates see *General Registration* on page 19 of this *Bulletin*.

FIRST TERM

1. GENERAL INORGANIC CHEMISTRY.—Lectures, recitations, and laboratory work on the elementary principles of chemistry and on the occurrence, preparation, properties, and uses of the elements and their compounds. Recitation daily, 8:00-9:00; laboratory daily, 9:00-12:00; lecture daily, 12:00-1:00. 4 s.h. MR. BONK

61. FUNDAMENTALS OF ANALYTICAL CHEMISTRY.—A study of the relations of electrolytes in solution and of chemical equilibrium illustrated by laboratory experiments involving the techniques of gravimetric, volumetric, and colorimetric analysis. Prerequisites: Chemistry 1-2 and Mathematics 6 or equivalent. Lecture or recitation daily, 8:30-10:00; laboratory daily, 10:30-12:30 and 1:30-4:00. 4 s.h. MR. SAYLOR

151. ORGANIC CHEMISTRY.—An introduction to the study of carbon compounds. Compounds of the aliphatic series form the basis of lectures, discussions and laboratory experiments. Prerequisite: Chemistry 61. Recitation daily, 8:00-9:00; laboratory daily, 9:00-12:00; lecture daily, 12:00-1:00. 4 s.h. MISS BROWN

275. THESIS RESEARCH.—Research in the fields of physical, analytical, inorganic, or organic chemistry. Open to those students whose research programs for the A.M. and Ph.D. degrees have been approved by the department and by one of the instructors in charge of the course. Schedule to be arranged. (Not more than one semester hour of credit per week for full-time schedule or one semester hour each two weeks for half-time schedule.) 2 to 8 s.h. Available Term I and II. STAFF

SECOND TERM

2. GENERAL INORGANIC CHEMISTRY.—A continuation of 1. Prerequisite: Chemistry 1. Recitation daily, 8:00-9:00; laboratory daily, 9:00-12:00; lecture daily, 12:00-1:00. 4 s.h. MR. HILL

152. ORGANIC CHEMISTRY.—A study of compounds of the aromatic series and of carbohydrates and proteins. Prerequisite: Chemistry 151. Recitation daily, 8:00-9:00; laboratory daily, 9:00-12:00; lecture daily, 12:00-1:00. 4 s.h. MR. QUIN

COMPARATIVE LITERATURE

FIRST TERM

203. REALISM AND SYMBOLISM.—Comparative studies in the literatures of England, France, Germany, Russia, The Scandinavian countries, Spain and Italy, tracing the decline of romantic individualism and the reappraisal of Man's significance against the social background. 9:20-10:40. 3 s.h. MR. SALINGER

ECONOMICS

PROFESSOR FRANK DE VYVER, CHAIRMAN—203E, SOCIAL SCIENCE BUILDING (WEST CAMPUS); PROFESSOR C. E. LANDON, DIRECTOR OF UNDERGRADUATE STUDIES—203 SOCIAL SCIENCE BUILDING (WEST CAMPUS); PROFESSOR J. J. SPENGLER, ACTING DIRECTOR OF GRADUATE STUDIES—322 LIBRARY (WEST CAMPUS)

FIRST TERM

51. PRINCIPLES OF ECONOMICS.—A course in the essential principles of economic science. (Credit for Ec 51 will not be given until Ec. 52 has been completed.) 9:20-10:40. 3 s.h. MR. YOHE

57. PRINCIPLES OF ACCOUNTING.—Elementary principles of single proprietorship, partnership, and corporation accounting. June 11-June 27. 7:40-12:20. 3 s.h. MR. BLACKBURN

58. PRINCIPLES OF ACCOUNTING.—A continuation of Economics 57. June 28-July 15. 3 s.h. MR. BLACKBURN

138. BUSINESS STATISTICS.—A survey of the principal statistical methods and their application to economic and business administration. The course deals with collection of statistical data, construction of statistical tables and charts, and a brief study of the fundamental statistical concepts and techniques. 9:20-10:40 3 s.h. MR. FOLSOM

153. MONEY, CREDIT AND BANKING.—This course begins with a study of the nature, characteristics, and functions of money, credit, and the commercial banking system. It covers also the history of commercial banking in the United States; the foundation, organization, and functions of the Federal Reserve System; the supervision and control of commercial banks; deposit insurance; and the value of money. 7:40-9:00. 3 s.h. MR. YOHE

168. MARKETING.—The topics covered in this course include the economic importance of markets and the marketing system; marketing functions; organization, and methods, price policies; finance; speculation; market research and planning for improvement; and regulation. 11:00-12:20. 3 s.h. MR. FOLSOM

171. ADVANCED ACCOUNTING.—Advanced accounting theory and practice applied to the managerial problems of valuation and operation in corporations, consolidations, mergers, and liquidations. Open to students who have completed Accounting 57-58. June 11-June 27. 7:40-12:20. 3 s.h. MR. KELLER

172. ADVANCED ACCOUNTING.—A continuation of Economics 171. June 28-July 15. 7:40-12:20. 3 s.h. MR. KELLER

318X. THESIS SEMINAR.—Hours to be arranged. MR. YOHE

SECOND TERM

52. PRINCIPLES OF ECONOMICS.—A continuation of Economics 51. 9:20-10:40. 3 s.h. MR. DEWEY

105. INDUSTRIAL MANAGEMENT.—This course deals primarily with the elements and problems of managing the operations of an industrial firm. Topics treated include the functions and responsibilities of management, qualities required in executives, organization, location, the physical plant, materials control, the planning and control of operations, industrial and market research, personnel, budgeting, purchasing, and records and reports. 7:40-9:00. 3 s.h. MR. HAHN

161. EUROPEAN ECONOMIC PROBLEMS.—This course deals with the losses and economic dislocations of the war, the problem of developing a new pattern of intra-European and world trade, the effort to stabilize prices and to establish a Common Market and proposed Free Trade Area. 7:40-9:00. 3 s.h. MR. GERHARD

188. PERSONNEL MANAGEMENT.—A study of the fundamental principles and problems of labor management and of collective bargaining under modern industrial conditions and under existing labor legislation. 9:20-10:40. 3 s.h. MISS ROBERTSON

189. BUSINESS AND GOVERNMENT.—An examination of the public policies which most directly affect the operation of competition in the business world. The course considers the leading philosophies of public control and economic development, the validity of their presuppositions, and their influence on legislation, court decisions, and administrative law. 11:00-12:20. 3 s.h. MR. DEWEY

318X. THESIS SEMINAR.—Hours to be arranged. MR. DEWEY

EDUCATION

PROFESSOR WILLIAM H. CARTWRIGHT, CHAIRMAN—08D WEST DUKE BUILDING (EAST CAMPUS); PROFESSOR EDWARD C. BOLMEIER, DIRECTOR OF GRADUATE STUDIES—08B WEST DUKE BUILDING (EAST CAMPUS)

For admission to candidacy for the Master of Arts (A.M.) degree with major in Education, or for the Master of Education (M.Ed.) degree, students must, in addition to meeting the general requirements for admission to the Graduate School, meet the following specific requirements: Credit for (1) eighteen semester hours of acceptable prior work in Education and (2) twelve semester hours of acceptable prior work in a minor field. If Psychology, Sociology, Economics, or Political Science is chosen for the minor, six semester hours of work completed after entering the Junior year in college will be accepted.

The degree of Master of Arts is available in the divisions of School Administration and Supervision, Secondary Education, Elementary Education, and Guidance and Counseling. Every candidate for the Master of Arts degree in the Department should elect at least twelve semester hours in one of these divisions in which he plans to write his thesis and the remainder of his work, including the six semester hours in his minor, with the approval of the proper division adviser. The degree of Master of Education is available in the divisions of School Administration and Supervision, Secondary Education, and Elementary Education. Mr. Bolmeier, Mr. Hurlburt, and Mr. Stumpf are advisers to students in School Administration and Supervision; Mr. Carr, Mr. Petty, and Miss Rudisill are advisers in Elementary Education; Mr. Bolmeier, Mr. Cartwright, and Mr. Dunning are advisers in Secondary Education; and Mr. Colver, Mr. Gehman, and Mr. Weitz are advisers in Guidance and Counseling. Mr. Cartwright, Mr. Dunning, and Mr. Hurlburt are advisers for the Master of Arts in Teaching program. Candidates for the Master of Arts, Master of Education, or Master of Arts in Teaching degree should read with special care the regulations of the Graduate School as set forth on pages 32-39. Candidates for the Master of Arts in the field of guidance should consult the special brochure on guidance available from the Dean of the Graduate School.

It is the intention of the Department to make available to degree candidates all courses ordinarily required for certification as graduate teachers, counselors, principals, and superintendents. These courses will normally be offered at least once every three years.

FIRST TERM

118. EDUCATIONAL PSYCHOLOGY.—A study of psychology of learning; individual and social development; and psychology of adjustment, as related to problems of instruction and the processes of education. 7:40-9:00. 3 s.h. MR. PALACIOS

201. TEACHING AND SUPERVISION OF ARITHMETIC.—This course gives special attention to the number system, the fundamental operations (with whole numbers, fractions, and decimals), percentage and measurements. The course will consider the meaning theory, methods of teaching, problem solving, evaluation,

practice and drill, and selection and gradation of arithmetical contents. The course is designed for teachers and supervisors in the elementary school. 7:40-9:00. 3 s.h. MR. PETTY

205. CURRICULUM PROBLEMS IN SECONDARY EDUCATION.—A consideration of the aims and objectives of secondary-school subjects, emphasizing practical problems of curriculum-making in the high school. 7:20-9:00. 3 s.h. MR. CARTWRIGHT

208. BOTANY FOR TEACHERS. (See Botany for description.)

210. INTRODUCTION TO EDUCATIONAL RESEARCH.—The general purpose of this course is to give the student an overview of research, acquaint him with the nature of research processes, and develop within him an appreciation of the essential characteristics of good research. 9:20-10:40. 3 s.h. MR. STUMPF

211. THE PROBLEM CHILD (also Psychology 211).—Study of problem behavior and adjustment in children with emphasis on the causes and treatment of conduct and neurotic disorders of the maladjusted child. Particular attention will be paid to mental hygiene principles in the handling of problem children in school and home. 11:00-12:20. 3 s.h. MRS. GEHMAN

(See also Psychology 232, PERSONALITY AND PHYSICAL HANDICAP, p. 54.)

213. ELEMENTARY-SCHOOL ORGANIZATION AND ADMINISTRATION.—This course is designed especially for principals, teachers, and other prospective members of the elementary-school staff. The scope of elementary education is considered to encompass nursery school, kindergarten, and the elementary school. Special treatment is given to the problems of internal organization and management of the elementary school and its integration with the secondary-school level. 11:00-12:20. 3 s.h. MR. STUMPF

217. THE PSYCHOLOGICAL PRINCIPLES OF EDUCATION.—An advanced study of teaching, learning, and the learner. Selected problems guiding the reading of students will be discussed in class. 11:00-12:20. 3 s.h. MR. GEHMAN

224. TEACHING THE SOCIAL STUDIES IN ELEMENTARY SCHOOLS.—This course will treat objectives, curriculum trends, methods, and materials in elementary-school social studies. Topics to receive emphasis include unit-planning, use of the textbook, the reading program, using community resources, audio-visual materials, dealing with controversial issues, teaching time and place concepts, and evaluation. Opportunity will be provided for teachers to work on their own school problems in the social studies. 9:20-10:40. 3 s.h. MR. CARTWRIGHT

235. THE NATURE, FUNCTION, AND REORGANIZATION OF THE CURRICULUM.—Selected problems guiding the reading of students. 7:40-9:00. 3 s.h. MR. CARR

241. PRINCIPLES OF GUIDANCE.—An historical survey of the philosophies of guidance; a study of the interrelationships between instruction, administration, and guidance in education. Prerequisite: 6 hours of psychology. 7:40-9:00. 3 s.h. MR. COLVER

243. PERSONALITY DYNAMICS.—A study of personality structure and dynamics with emphasis upon the implications for counseling and instruction. Prerequisite: 6 hours of psychology or educational psychology. 9:20-10:40. 3 s.h. MR. GEHMAN

253. SCHOOL LAW.—The primary purpose of this course is to familiarize school administrators and teachers with the legal features of school organization and administration. Although some attention is given to constitutional and statutory provisions, the main emphasis is upon court decisions relating to education. Students are expected to select appropriate problems in school law for intensive study. 7:40-9:00. 3 s.h. MR. BOLMEIER

315. SEMINAR IN SECONDARY SCHOOL TEACHING.—Advanced-level consideration of principles, practices, and problems in secondary school instruction.

Designed particularly to accompany an internship. For students without previous internship credit, this course must be accompanied by Education 216.
315.1. 7:40-9:00. 3 s.h. MR. HURLBURT
315.2. 11:00-12:20. 3 s.h. MR. HURLBURT

SECOND TERM

202. EDUCATION AND THE SOCIAL ORDER. A cross disciplinary approach to the study of social aspects of the educational process. Significant contributions of social scientists and educators are considered. 9:20-10:40. 3 s.h. MR. WRONSKI

225. THE TEACHING OF HISTORY AND THE SOCIAL STUDIES.—Evaluation of the objectives, content, materials, and methods in the teaching of history and the social studies. 11:00-12:20. 3 s.h. MR. WRONSKI

226. TEACHING READING IN THE ELEMENTARY SCHOOL.—A study of the nature of the reading process and of principles, methods, and materials for the development of effective reading attitudes and skills as applied both to developmental and remedial programs. 7:40-9:00. 3 s.h. MISS RUDISILL

234. SECONDARY-SCHOOL ORGANIZATION AND ADMINISTRATION.—This course is designed especially for principals, teachers, and other prospective members of the secondary-school staff. The scope of secondary education is considered to encompass junior high school, regular high school, senior high, and junior college. Special treatment is given to the problems of internal organization and management. 7:40-9:00. 3 s.h. MR. BOLMEIER

237. LITERATURE FOR ADOLESCENTS.—This course offers a critical survey of literature written for, or appropriate for, junior and senior high school students. Fiction, non-fiction, biography, poetry, and drama are examined. Both adult and transition-type literature are considered. Methods of organizing the program in literature are explored. 9:20-10:40. 3 s.h. MR. DUNNING

238. REMEDIAL READING.—PRINCIPLES AND PRACTICE.—A study of the basic causes of reading disability and of principles, methods, and materials for the diagnosis and correction of specific difficulties. The course provides practice with grade school children suffering reading retardation, including testing, diagnosis, and daily remedial teaching during the six-week period. A basic course in the psychology or teaching of reading is prerequisite, or Education 226 may be taken concurrently. 11:00-12:20. 3 s.h. MISS RUDISILL

239. METHODS AND PROBLEMS OF TEACHING ENGLISH IN SECONDARY SCHOOLS.—This course will present sound methods of teaching the reading of literature and other forms of writing, language, grammar and composition. Materials will include selections found in widely adopted textbooks, numerous specimen themes for grading, and current books and articles in the field. Several short compositions and a report will be required. 7:40-9:00. 3 s.h. MR. DUNNING

258. EDUCATIONAL MEASUREMENTS.—A critical study of the principles and techniques involved in measurement in education, with opportunity for individual research. Prerequisite: twelve semester hours in the Department, including a course in educational psychology.
258.1. 9:20-10:40. 3 s.h. MR. JONES
258.2. 11:00-12:20. 3 s.h. MR. JONES

ENGINEERING

PROFESSOR WALTER J. SEELEY, DEAN OF THE COLLEGE OF ENGINEERING
135 ENGINEERING BUILDING (WEST CAMPUS)

FIRST TERM

C.E.110. PLANE SURVEYING.—Use of instruments, transit, stadia, and compass surveying; determination of meridian by observation on Polaris; differential and profile leveling; setting grade stakes; calculation of bearings, latitudes, departures and areas; methods of plotting; survey and plot or portions of campus by stadia,

and transit and tape; care and adjustment of instruments. Prerequisites: trigonometry; engineering drawing desirable. (Four weeks, eight hours a day). Instruction begins on June 11 and continues through July 9. 8:00-12:00, 1:00-5:00. 4 s.h. (See Forestry.) MR. THARP

ENGLISH

PROFESSOR ARLIN TURNER, CHAIRMAN—311 ALLEN BUILDING (WEST CAMPUS)
PROFESSOR BENJAMIN BOYCE, DIRECTOR OF GRADUATE STUDIES—
401 ALLEN BUILDING (WEST CAMPUS)

Candidates for the Master's degree in English are expected to have had at least twelve semester hours in undergraduate courses above the Sophomore level. The Department may also require additional courses if the work of the student in his first term indicates inadequate preparation.

FIRST TERM

55. REPRESENTATIVE WRITERS.—Chaucer's Prologue to *The Canterbury Tales* and at least two tales, Shakespeare's *I Henry IV, Hamlet* or *King Lear,* and one other play, John Donne's poems, Milton's *Paradise Lost* (selections) and some of the shorter poems. 9:20-10:40. 3 s.h. MR. SMITH

222. ENGLISH LITERATURE OF THE EARLY NINETEENTH CENTURY.—The British Romantic poets and prose writers, 1810-1830, with special attention to Byron, Shelley, and Keats. 9:20-10:40. 3 s.h. MR. STEVENSON

235. AMERICAN LITERATURE SINCE 1920.—Sherwood Anderson, Mencken, Lewis, Lardner, Gertrude Stein, Pound, Eliot, E. E. Cummings, Hemingway, Faulkner, and Fitzgerald are emphasized. 7:40-9:00. 3 s.h. MR. FENTON

266. RECENT TRENDS IN LITERARY CRITICISM.—A survey and analytical examination of the major trends and figures in twentieth-century American criticism. Emphasis is on Eliot, Pound, Babbitt, Santayana, Wilson, Tate, and Trilling. 9:20-10:40. 3 s.h. MR. O'CONNOR

267. MAJOR ENGLISH WRITERS OF THE TWENTIETH CENTURY.—An examination of important movements and figures from Samuel Butler to the post-World War II writers. Emphasis is on Shaw, Yeats, and Forster. 11:00-12:20. 3 s.h. MR. O'CONNOR

347. STUDIES IN VICTORIAN POETRY.—Analysis of themes, forms, and sources in the works of Tennyson, Browning, Arnold, Rossetti, Swinburne, Meredith, Hardy, and Hopkins. 11:00-12:20. 3 s.h. MR. STEVENSON

SECOND TERM

56. REPRESENTATIVE WRITERS.—Pope's *Poems* (selections), Fielding's *Joseph Andrews,* Keats's *Poems and Letters,* Arnold's *Selected Poetry and Prose,* Dickens's *Great Expectations,* Yeats's *Poems* (selections), and Shaw's *Man and Superman.* 9:20-10:40. 3 s.h. MR. BUDD

217. MILTON.—Milton's poetry and prose, with emphasis on the major poems. 9:20-10:40. 3 s.h. MR. BRYANT

233. AMERICAN LITERATURE, 1865-1920.—Selected works of representative authors: Whitman, Lanier, Mark Twain, James, Howells, Emily Dickinson, Henry Adams, and the Local Colorists. 9:20-10:40. 3 s.h. MR. GOHDES

239. SHAKESPEARE.—A study of the plays and poems. 7:40-9:00. 3 s.h. MR. BRYANT

331. EMERSON.—A study of Emerson's ideas as reflected in selected examples of his essays and poems. 11:00-12:20. 3 s.h. MR. GOHDES

FORESTRY

PROFESSOR E. S. HARRAR, DEAN OF THE SCHOOL OF FORESTRY AND DIRECTOR OF GRADUATE STUDIES—308 SOCIAL SCIENCE BUILDING (WEST CAMPUS)

Organized course work in the School of Forestry during the Summer Session is limited to plane surveying, forest surveying, and forest mensuration which are required of all students entering upon two years of study in technical forestry leading to the degree of Master of Forestry.

Qualified students may engage in thesis research in certain branches of forestry during the Summer Session with the approval of the instructor concerned and the Dean of the School of Forestry, or of the Director of Graduate Studies in the case of work taken through the Graduate School.

C.E.110. PLANE SURVEYING.—Use and adjustment of instruments; transit-tape, stadia, and plane table surveying; differential and profile leveling; calculation of bearings, latitudes, departures, and areas; accuracy and errors; celestial observations for azimuth; triangulation. Prerequisites: trigonometry; engineering drawing desirable. (Four weeks, eight hours a day.) Instruction begins on June 11 and continues through July 9. 4 s.h. MR. THARP

150. FOREST SURVEYING AND AERIAL PHOTO INTERPRETATION.—Application of plane surveying to forest problems; practice in making boundary, topographic and cover type surveys; details of land ownership and transfer, title search, and deed descriptions. The last two weeks will be spent in the study of the principles of aerial photogrammetry and photo interpretation, and may be taken separately for two hours of credit. Prerequisites: Civil Engineering 110, Plane Surveying; or equivalent. (Four weeks, eight hours a day.) July 11-August 6. 4 s.h. MR. CHAIKEN

151. FOREST MENSURATION.—Field studies in methods of measuring content and growth of trees and forest stands; practice in timber estimating, log scaling, use of mensurational instruments, and collection of basic data. (Four weeks, eight hours a day.) August 8-September 3. 4 s.h. MR. SCHUMACHER

357. RESEARCH IN FORESTRY.—Open to students whose research programs for the M.F. or D.F. degree have been approved by the Dean of the School of Forestry and the instructor responsible for directing the research and whose programs for the A.M. or Ph.D. degree have been approved by the Director of Graduate Studies and the instructor in charge. (Credits and schedule to be arranged.) June 11-August 20. 2 to 12 s.h. (Not more than one semester hour of credit per week for full time schedule or one semester hour each two weeks for half-time schedule.) (Consult courses 301-302 in Announcement of School of Forestry for letter designation of branches of forestry in which research is to be conducted.) STAFF

GEOLOGY

PROFESSOR E. WILLARD BERRY, CHAIRMAN—019 SCIENCE (EAST CAMPUS)

The class in Geology, Term I, will begin on June 20 and continue through July 15. The class in Geology, Term II will begin on July 18 and continue through August 12. Students who wish to avoid paying a late registration fee must have their registration completed in advance of these dates. For registration dates see *General Registration* on page 19 of this *Bulletin*.

FIRST TERM

51. GENERAL GEOLOGY.—This course is designed to give a general view of the surface features of the earth, their origin, structure, and materials. Illustrative materials are studied in the laboratory. Excursions may be made to neighboring points where principles of the science are studied in the field. Lectures or recitations, 8:00-11:00 daily; laboratory 2:00-5:00, Monday through Thursday. June 20-July 15. 4 s.h. MR. HERON

SECOND TERM

52. GENERAL GEOLOGY.—This course is designed to give some knowledge of the chief events of the earth's history. Excursions may be made to suitable neighboring localities. Lectures or recitations, 8:00-11:00 daily; laboratory 2:00-5:00, Monday through Thursday. July 18-August 12. 4 s.h. MR. HERON

GERMAN

PROFESSOR HERMAN SALINGER, CHAIRMAN—301C GRAY BUILDING (WEST CAMPUS)

The work in German 63 and 64 will be coordinated with listening and oral practice in the Language Laboratory which students in German classes will be privileged to attend. Attendance in the Laboratory is not compulsory but is very strongly advised by the Staff.

FIRST TERM

63. INTERMEDIATE GERMAN.—Grammar review and composition; reading of short stories, novels, and poems. Prerequisite: German 1-2, or two units of high school German. 9:20-10:40. 3 s.h. MR. ALLEN

64. INTERMEDIATE GERMAN.—Continuation of German 63. Prerequisite: German 63 which may be taken concurrently. 11:00-12:20. 3 s.h. MR. ALLEN

GRADUATE READING COURSE.—An intensive course in German to develop rapidly the ability to read technical German in several fields. For graduate students only. 9:20-10:40. No degree credit. MR. SEYMOUR

GREEK

PROFESSOR JAMES N. TRUESDALE, CHAIRMAN—123 ALLEN BUILDING (WEST CAMPUS)

FIRST TERM

121. GREEK LITERATURE: HOMER.—*Iliad* and *Odyssey*. The purpose of this course is to give a general survey of the life and civilization of the Greeks, especially to those who have never studied the language but wish to become acquainted with some of the choicest portions of the literature by the use of translations. The *Iliad* and the *Odyssey* are read in translation, and the excavations and discoveries at Troy and other cities of the Aegean age are discussed.
MESSRS. TRUESDALE, WOMBLE

121.1 7:40-9:00. 3 s.h.

121.2 7:40-9:00. 3 s.h.

122. GREEK LITERATURE: THE TRAGIC POETS.—The purpose of this course is similar to that of course 121. Many of the extant plays of Aeschylus, Sophocles, and Euripides are studied in English translations. 9:20-10:40. 3 s.h.
MR. TRUESDALE

HEALTH AND PHYSICAL EDUCATION

E. M. CAMERON, DIRECTOR, TRINITY COLLEGE AND COLLEGE OF ENGINEERING—109 GYMNASIUM (WEST CAMPUS)

FIRST TERM

PE 182. THE ADMINISTRATION OF HEALTH AND PHYSICAL EDUCATION IN SECONDARY SCHOOLS.—Presents the everyday problems that arise in the experience of the teacher of health and physical education. Open to juniors and seniors. 11:00-12:20. 3 s.h. MR. HARRISON

PE 190. PROTECTIVE PRACTICES IN PHYSICAL EDUCATION.—Training and conditioning of athletic teams and the prevention, diagnosis, and treatment of athletic injuries. Gymnasium. 1:40-3:00. 3 s.h. MR. CHAMBERS

HISTORY

PROFESSOR JOHN R. ALDEN, CHAIRMAN—235 ALLEN BUILDING (WEST CAMPUS)
PROFESSOR HAROLD T. PARKER, DIRECTOR OF GRADUATE STUDIES—
232 ALLEN BUILDING (WEST CAMPUS)

For admission to candidacy for a Master's degree in History the student must present a total of eighteen semester hours of prior work in History, of which at least six must be in American History if he plans to take his major work in that field. Before enrolling for thesis supervision, candidates for the Master's degree are required to complete at least three semester hours of seminar work and are strongly urged to enroll for this work in the second term of their attendance in the Summer Session. (See courses numbered 300 or above.)

FIRST TERM

51. MODERN HISTORY, 1500-1851.—The central fact of the expansion of Europe underlies the content of the course. The chief themes are: the contest between liberty and authority in the modern state, changing economic theory and organization, and the problems of peace and war among the states, including the Western infiltration of Asia, Latin America, and Africa, and the rise of the United States as a world power. 7:40-9:00. 3 s.h. MR. GILLIN

91. THE DEVELOPMENT OF AMERICAN DEMOCRACY TO 1865.—This course is a study of trends vital to an understanding of the United States today. The main theme is the development of American democracy. Problems of foreign policy, the growth of capitalism, political practices, social behavior, and conflicting ideals are considered in relation to this main theme. 11:00-12:20. 3 s.h.
MR. CRAVEN

142. CHINA AND JAPAN IN MODERN TIMES.—The course examines China's recent history, beginning with the Boxer Uprising of 1900 and culminating in the Japanese invasion and the triumph of the Communists, and analyzes Japan's concurrent rise to the status of a world power. 9:20-10:40. 3 s.h. MR. GILLIN

219. THE DEVELOPMENT OF POLITICAL INSTITUTIONS IN ASIA.—Content and emphasis may vary. In the summer of 1960, it will stress Japan. 9:20-10:40. 3 s.h. MR. TAKEUCHI

220. STUDIES IN ASIAN HISTORY AND POLITICS.—This course will be conducted as a seminar with research papers by students. 1:40-3:00. 3 s.h.
MR. TAKEUCHI

246. WAR IN THE MODERN WORLD.—This course is concerned with the relations between warfare and political, economic, and social conditions from 1871 to the present. Special attention is given to British and American military policies and to an analysis of land, sea, and air warfare during the First and Second World Wars. 7:40-9:00. 3 s.h. MR. ROPP

292. LITERATURE AND SOCIETY IN TWENTIETH CENTURY FRANCE.—Such major French writers as Proust, Gide, Malraux, Sartre, and Camus are examined against the background of social, economic, and political change in France since 1900. Lectures and discussion in English; readings in French or in English. 11:00-12:20. 3 s.h. MESSRS. COLTON AND CORDLE

293. THE NORTHEAST IN AMERICAN HISTORY, 1815-1860.—A study of the impact of the Industrial Revolution on Puritan New England, Cosmpolitan New York, and Quaker Pennsylvania. Emphases will be placed on social-intellectual reactions and the growth of sectional interests and consciousness. 9:20-10:40. 3 s.h. MR. CRAVEN

301. SEMINAR IN HISTORICAL INVESTIGATION.—A course designed to introduce teachers, current and prospective, to the processes of historical research through investigation of particular instances. The topics selected for investigation vary with the needs and interests of each individual. 1:40-3:00 or at an hour to be arranged. 3 s.h. MR. COLTON

SECOND TERM

52. MODERN HISTORY, 1851-1960.—A continuation of History 51. 7:40-9:00. 3 s.h. MR. TISCHENDORF

92. THE DEVELOPMENT OF AMERICAN DEMOCRACY, 1865 TO THE PRESENT.—The emphasis is on the emergence of contemporary problems. 11:00-12:20. 3 s.h. MR. DURDEN

132. LATIN AMERICA IN THE TWENTIETH CENTURY.—Political, social, and economic history of Latin America in the twentieth century, with special reference to Argentina, Brazil, and Chile. 9:20-10:40. 3 s.h. MR. TISCHENDORF

254. THE OLD SOUTH, 1607-1865.—After a brief survey of basic institutions of the South in the colonial period, the course deals primarily with the development of the South as a self-conscious section and its changing leadership from Jefferson to Calhoun and Davis. 9:20-10:40. 3 s.h. MR. DURDEN

302. SEMINAR IN HISTORICAL INVESTIGATION.—See description of 301. 1:40-3:00 or at an hour to be arranged. MR. FERGUSON

LATIN AND ROMAN STUDIES

PROFESSOR ROBERT S. ROGERS, CHAIRMAN—204 CARR BUILDING (EAST CAMPUS)

FIRST TERM

111. ROMAN LITERATURE IN ENGLISH TRANSLATION.—Selected readings of Latin literature in English translation with emphasis on the drama, lyric poetry, and the varied contributions of Cicero to literature. 9:20-10:40. 3 s.h. MR. WOMBLE

MATHEMATICS

PROFESSOR J. J. GERGEN, CHAIRMAN—134 PHYSICS BUILDING (WEST CAMPUS); PROFESSOR J. H. ROBERTS, DIRECTOR OF GRADUATE STUDIES—230 PHYSICS BUILDING (WEST CAMPUS)

Graduate students are invited to consult with the Director of Graduate Studies concerning their programs.

FIRST TERM

5. COLLEGE ALGEBRA.—Advanced topics in quadratic equations, systems involving quadratics, variation, binomial theorem, progressions, inequalities, theory of equations, determinants, partial fractions, probability. This course and Mathematics 6 may be taken concurrently. Prerequisite: Mathematics 1, or one and one-half units in algebra and one unit in geometry. 7:40-9:00. 3 s.h. STAFF

6. PLANE TRIGONOMETRY.—Logarithms, right and oblique triangles, radian measure, graphs of trigonometric functions, inverse trigonometric functions, trigonometric identities and equations. Prerequisite: Must be preceded or accompanied by Mathematics 5. 9:20-10:40. 3 s.h. STAFF

213. MODERN ALGEBRA.—Construction of the number system. Introduction to groups, fields, rings, vector spaces, linear transformations. Prerequisite: Calculus. 7:40-9:00. 3 s.h. MR. THOMAS

259. SOLID ANALYTIC GEOMETRY.—Spatial and n-dimensional coordinate geometry. Configurations of planes and lines, quadric surfaces, algebraic curves. Prerequisite: Calculus. 9:20-10:40. 3 s.h. MR. THOMAS

389X. THESIS SEMINAR.—Supervision of individual theses in algebra, analysis and geometry. Students should consult with the Director of Graduate Studies before registering. Thesis credit only. Hours to be arranged.

STAFF

SECOND TERM

50. PLANE ANALYTIC GEOMETRY.—Rectangular and polar coordinates, loci, straight lines, conic sections. This course and Mathematics 51 may be taken concurrently. Prerequisites: Mathematics 5 and 6. 7:40-9:00. 3 s.h. Mr. Elliott

51. CALCULUS I.—Differentiation of elementary functions, curve tracing, maxima and minima, motion, curvature, indeterminate forms. Prerequisite: Must be preceded or accompanied by Mathematics 50. 9:20-10:40. 3 s.h. Mr. Elliott

PHILOSOPHY

PROFESSOR CHARLES A. BAYLIS, CHAIRMAN—212 WEST DUKE BUILDING (EAST CAMPUS); ASSOCIATE PROFESSOR BERNARD PEACH, DIRECTOR OF GRADUATE STUDIES—212 WEST DUKE BUILDING (EAST CAMPUS)

FIRST TERM

49. ETHICS.—An introductory consideration of basic ethical concepts and principles as developed in European and American thought and culture. 9:20-10:40. 3 s.h. Mr. Binkley

91. INTRODUCTION TO PHILOSOPHY.—A systematic and historical examination of the major problems of knowledge, morals, and metaphysics. 11:00-12:20. 3 s.h. Mr. Binkley

SECOND TERM

48. LOGIC.—A study of the conditions of effective thinking and clear communication. Examination of the basic principles of deductive reasoning (making explicit the implications of statements) and of inductive reasoning (the formulation and testing of hypotheses on the basis of experience and experiment). 11:00-12:20. 3 s.h. Mr. Clark

91. INTRODUCTION TO PHILOSOPHY.—A systematic and historical examination of the major problems of knowledge, morals, and metaphysics. 9:20-10:40. 3 s.h. Mr. Clark

PHYSICS

PROFESSOR WALTER M. NIELSEN, CHAIRMAN, 119 PHYSICS BUILDING; ASSOCIATE PROFESSOR HAROLD LEWIS, DIRECTOR OF GRADUATE STUDIES—043 PHYSICS BUILDING (WEST CAMPUS)

Classes in Physics 41, Term I, will begin on June 20 and continue through July 15. Classes in Physics 42, Term II, will begin on July 18 and continue through August 12. Students who wish to avoid paying a late registration fee must have their registration completed in advance of these dates. For registration dates see *General Registration* on page 19 of this *Bulletin*.

FIRST TERM

41. GENERAL PHYSICS.—This course treats the basic principles of general physics in a more quantitative manner than Physics 1-2. It meets in a thorough way the physics requirement for entrance into the study of either medicine or engineering, and is well suited for the general science student. This course is not open for credit for students who have completed Physics 1-2. Lecture and recitation daily, 8:30-9:50 and 10:10-11:30; laboratory four days per week, 1:00-4:00. Prerequisites: Mathematics 5-6 or equivalent. 4 s.h.
Messrs. Carpenter and Stephenson

353X. THESIS SEMINAR.—Students who are properly qualified may carry on research work under direction. Credits and hours to be arranged. Staff

SECOND TERM

42. GENERAL PHYSICS.—A continuation of Physics 41. Prerequisite: Physics 41. Lecture and recitation daily, 8:30-9:50 and 10:10-11:30; laboratory four days per week, 1:00-4:00. 4 s.h. Messrs. Carpenter and Stephenson

POLITICAL SCIENCE

PROFESSOR ROBERT S. RANKIN, CHAIRMAN—308 LIBRARY (WEST CAMPUS); PROFESSOR ROBERT R. WILSON, DIRECTOR OF GRADUATE STUDIES—405 LIBRARY (WEST CAMPUS)

FIRST TERM

61. THE AMERICAN POLITICAL SYSTEM.—An analysis of the principles and institutions of the national government of the United States. 7:40-9:00. 3 s.h. MR. LEACH

123. INTRODUCTION TO POLITICAL PHILOSOPHY.—A course devoted to the reading and discussion of selected political classics including Plato's *Republic,* Aristotle's *Ethics and Politics* and other works as time permits. 9:20-10:40. 3 s.h. MR. LEACH

219. THE DEVELOPMENTS OF POLITICAL INSTITUTIONS IN ASIA.—Content and emphasis may vary. In the summer of 1960, it will stress Japan. 9:20-10:40. 3 s.h. MR. TAKEUCHI

220. STUDIES IN ASIAN HISTORY AND POLITICS.—This course will be conducted as a seminar with research papers by students. 1:40-3:00. 3 s.h. MR. TAKEUCHI

SECOND TERM

62. COMPARATIVE POLITICAL SYSTEMS.—An analysis of the principles and institutions of selected foreign governments, as compared with those of the United States. 7:40-9:00. 3 s.h. MR. PROCTOR

121. ELEMENTS OF INTERNATIONAL RELATIONS.—Analysis of international politics, of the foundations of national power, and of international cooperation, with emphasis upon attempted solutions of the central problems of international security. 9:20-10:40. 3 s.h. MR. PROCTOR

PSYCHOLOGY

PROFESSOR ELIOT H. RODNICK, CHAIRMAN—101 BIVINS BUILDING (EAST CAMPUS); PROFESSOR KARL ZENER, DIRECTOR OF GRADUATE STUDIES—205 PSYCHOLOGY LABORATORY BUILDING (EAST CAMPUS)

Details concerning the program in studies in Psychology may be obtained from the Director of Graduate Studies in Psychology.

FIRST TERM

91. INTRODUCTORY PSYCHOLOGY.—An introduction to the facts, principles, and problems of normal adult psychology through a study of psychological methods as applied to motivation, emotions, perception, sensation, thinking, memory, learning, individual differences, and personality.

91.1. 7:40-9:00. 3 s.h. MR. DUNHAM

91.2. 7:40-9:00. 3 s.h. MR. KING

91.3. 9:20-10:40. 3 s.h. MR. KING

211. THE PROBLEM CHILD (Also Education 211).—Study of problem behavior and adjustment in children with emphasis on the causes and treatment of conduct and neurotic disorders of the maladjusted child. Particular attention will be paid to mental hygiene principles in the handling of problem children in school and home. 11:00-12:20. 3 s.h. MRS. GEHMAN

232. PERSONALITY AND PHYSICAL HANDICAP.—Survey of the psychological factors underlying adjustment to physical disabilities, with particular stress upon personality, emotional and social attributes. Selected case studies will be used to illustrate the integration of such factors in adjusting to home, school, and hospital settings. These cases will stress the psychological factors which hinder

learning and retraining procedures. Discussion will center about psychological techniques to produce more effective progress in rehabilitation. 7:40-9:00. 3 s.h. MR. DASTON

303. RESEARCH.—Students who are properly qualified may carry on research work under direction. Hours and credit to be arranged. STAFF

SECOND TERM

106. ABNORMAL PSYCHOLOGY.—A systematic presentation of the psychology of personality abnormalities with emphasis on its bearing upon normal personality theory. 7:40-9:00. 3 s.h. MR. BAXTER

304. RESEARCH.—Students who are properly qualified may carry on research work under direction. Hours and credit to be arranged. STAFF

RELIGION

PROFESSOR ROBERT E. CUSHMAN, DEAN OF THE DIVINITY SCHOOL—110 DIVINITY SCHOOL (WEST CAMPUS); ASSOCIATE PROFESSOR JAMES L. PRICE, CHAIRMAN OF THE DEPARTMENT OF RELIGION—107 GRAY (WEST CAMPUS); ASSOCIATE PROFESSOR D. G. BRADLEY, DIRECTOR OF UNDERGRADUATE STUDIES IN RELIGION—108 GRAY (WEST CAMPUS); PROFESSOR WALDO BEACH, DIRECTOR OF GRADUATE STUDIES IN RELIGION—308 DIVINITY SCHOOL (WEST CAMPUS)

THE DEPARTMENT OF RELIGION

FIRST TERM

51. THE ENGLISH BIBLE.—A survey of the books of the Old Testament which examines their origin in the history of the people of the Bible, and which give attention to major persons and events. Religion 51 must be followed by Religion 52 to satisfy the uniform course requirements in Religion. (For alternate sequence see Religion 55.)

51.1. 7:40-9:00. 3 s.h. MR. LANGFORD

51.2. 11:00-12:20. 3 s.h. MR. SALES

52. THE ENGLISH BIBLE.—A survey of the books of the New Testament which examines their origin in the Early Church and which gives attention to major persons and events. Religion 52 must be preceded by Religion 51 to satisfy the uniform course requirement in Religion. 9:20-10:40. 3 s.h. MR. SALES

55. THE RELIGION OF THE BIBLE.—An introduction to the historical and critical study of the Old and New Testaments which considers the principal persons, events, ideas and practices in the Bible and their significance for the present time. Religion 55 is not open to students receiving credit for Religion 1-2 or 51-52, and it must be followed by one other course selected from those numbered 60-99 to satisfy the uniform course requirement in Religion. 9:20-10:40. 3 s.h. MR. BRADLEY

140. CHRISTIAN BELIEFS (formerly Religion 192).—An introductory study of important Christian teachings concerning God, Jesus Christ, sin and salvation, etc., intended to serve as a basis for the student's evaluation of his own religious concepts. 11:00-12:20. 3 s.h. MR. LANGFORD

SECOND TERM

52. THE ENGLISH BIBLE.—For description see Term I. 7:40-9:00. 3 s.h. MR. OSBORN

55. THE RELIGION OF THE BIBLE.—For description see Term I. 9:20-10:40. 3 s.h. MR. DANIELS

85. INTRODUCTION TO CHRISTIAN ETHICS (formerly Religion 91).—A brief analysis of the Biblical and historical bases for the Christian understanding of man's moral situation, followed by a study of the social implications of Christianity in such areas of life as marriage, race, the political and economic order, etc. Consideration is given to the relation of Christian ethics to moral philosophy. Prerequisite: Religion 55. 9:20-10:40. 3 s.h. MR. OSBORN

121. THE MISSION AND MESSAGE OF JESUS. (formerly Religion 116).—An analysis and interpretation of the Gospels, designed to afford the student a fuller understanding of Jesus and his mission. Not open to students who have received credit for Religion 65. 11:00-12:20. 3 s.h. MR. DANIELS

THE DIVINITY SCHOOL

Class enrollments will be controlled as occasion may arise so as to secure a fairly even distribution among the courses offered in each term.

FIRST TERM

21 (DS). THE THEOLOGY OF THE PROTESTANT REFORMATION.—The Reformation of the 16th century and its outcome in the 17th and 18th centuries. 7:40-9:00. 3 s.h. MR. GRISLIS

28 (DS). HISTORY OF AMERICAN CHRISTIANITY.—A consideration of the nature of Christianity in America and the history of its development. 7:40-9:00. 3 s.h. MR. HENRY

116 (DS). LIVING ISSUES OF NEW TESTAMENT THEOLOGY.—Examination of recent major questions of debate in the New Testament field. 11:00-12:20. 3 s.h. MR. ANDERSON

195 (DS). ORIGINS OF DOGMATIC THOUGHT.—An analysis of dogmatic concepts in the Gospel of John: their development into a body of doctrine. 9:20-10:40. 3 s.h. MR. HERZOG

SECOND TERM

32 (DS). CONTEMPORARY WESTERN CULTURE.—An analysis of the conceptual commitments in contemporary styles of thought and life as reflected in the natural sciences, philosophy, social analysis, and the arts. 9:20-10:40. 3 s.h. MR. POTEAT

111 (DS). THE CHURCH AND RACE.—An examination of the biological and social meaning of race, the dynamics of race relations and the Church's responsibility in the area of contemporary life. 7:40-9:00. 3 s.h. MR. RANSON

192 (DS). CHRISTIANITY AND INTERNATIONAL RELATIONS.—An application of Christian Ethics to world problems. 7:40-9:00. 3 s.h. MR. LACY

224 (DS). CONCEPTIONS OF MAN IN WESTERN THOUGHT.—An analysis and interpretation of important types of philosophical and theological theory. 11:00-12:20. 3 s.h. MR. RICHEY

ROMANCE LANGUAGES

PROFESSOR GIFFORD DAVIS, CHAIRMAN—214 CARR BUILDING (EAST CAMPUS);
PROFESSOR R. L. PREDMORE, DIRECTOR OF GRADUATE STUDIES—
201 CARR BUILDING (EAST CAMPUS)

The Audio Laboratory will be available to French and Spanish students in Courses 1-2, 63-64 for supplementary exercises in the spoken language. All auditions will be synchronized with the daily textbook assignments.

FRENCH

FIRST TERM

1. ELEMENTARY FRENCH.—Introduction to simple conversational patterns, elements of grammar, graded readings. 7:40-9:00. 3 s.h. MR. BUSH

63. INTERMEDIATE FRENCH.—The progressive development of skills in speaking, understanding, and reading. Prerequisite: French 1-2 or two years of high school French. 11:00-12:20. 3 s.h. MR. HARDEE

91. INTRODUCTION TO FRENCH LITERATURE.—Development of skill in rapid reading correlated with discussion in French of content and ideas. 7:40-9:00. 3 s.h. MR. WALTON

92. INTRODUCTION TO FRENCH LITERATURE.—Continuation of French 91, with main emphasis on authors of the nineteenth and twentieth centuries. May be taken concurrently with 91. 11:00-12:20. 3 s.h. MR. SANDBERG

292. LITERATURE AND SOCIETY IN TWENTIETH CENTURY FRANCE.—Such major French writers as Proust, Gide, Malraux, Sartre, and Camus are examined against the background of social, economic, and political change in France since 1900. Lectures and discussion in English; readings in French or in English. 11:00-12:20. 3 s.h. MESSRS. COLTON AND CORDLE

SECOND TERM

2. ELEMENTARY FRENCH.—Continuation of 1. 7:40-9:00. 3 s.h. MR. RIPLEY

64. INTERMEDIATE FRENCH.—Continuation of 63 with more extensive reading. 11:00-12:20. 3 s.h. MR. CHERPACK

SPANISH

FIRST TERM

1. ELEMENTARY SPANISH.—Introduction to simple conversational patterns, elements of grammar, graded readings. 11:00-12:20. 3 s.h. MISS KRUMMEL

63. INTERMEDIATE SPANISH.—The progressive development of the skills in speaking, understanding, and reading. Prerequisite: Spanish 1-2 or two years of high school Spanish. 7:40-9:00. 3 s.h. MR. FLINT

91. INTRODUCTION TO SPANISH LITERATURE.—Readings from representative Spanish authors. Development of skill in rapid reading correlated with discussion in Spanish of content and ideas. 7:40-9:00. 3 s.h. MR. PREDMORE

92. INTRODUCTION TO SPANISH LITERATURE.—Continuation of 91. May be taken concurrently with 91. 11:00-12:20. 3 s.h. MR. TORRE

SECOND TERM

2. ELEMENTARY SPANISH.—Continuation of 1. 11:00-12:20. 3 s.h. MR. MILLER

64. INTERMEDIATE SPANISH.—Continuation of 63 with more extensive reading. 7:40-9:00. 3 s.h. MR. MILLER

SOCIOLOGY

PROFESSOR JOHN C. MCKINNEY, CHAIRMAN—215D SOCIAL SCIENCE BUILDING (WEST CAMPUS); PROFESSOR ALAN C. KERCKHOFF, DIRECTOR OF GRADUATE STUDIES—215E SOCIAL SCIENCE BUILDING (WEST CAMPUS)

The Department of Sociology offers graduate work leading to the A.M. and Ph.D. degrees. Before undertaking advanced work in this department, a student must have completed a minimum of twelve semester hours of approved preliminary

courses in the field, and twelve additional semester hours in the field or in related work. A student who is deficient in the minimum required work will be asked to take additional undergraduate courses agreed upon in conference with the Director of Graduate Studies.

Candidates for advanced degrees in Sociology usually take minor work in Psychology, Economics, Political Science, Education, History, or Religion. Detailed requirements for the minor work, and for majors in other departments who wish to present Sociology as minor work, may be obtained from the Director of Graduate Studies.

FIRST TERM

91. GENERAL SOCIOLOGY.—An introduction to the scientific study of social life, its origin, evolution, and organization as illustrated by the study of a number of concrete social problems. Credit is given only upon completion of Sociology 92. 11:00-12:20. 3 s.h. MR. VANDER ZANDEN

150. THE FAMILY.—Analysis of the American family as an institutionalized group and its relationship with other institutions and structural features such as social class and ethnic group. Special attention is devoted to methods of research in this area. 9:20-10:40. 3 s.h. MR. VANDER ZANDEN

242. THE SOCIOLOGY OF OCCUPATIONS AND PROFESSIONS.—The social significance of work. Analysis of forces changing the comtemporary occupational structure, typical career patterns of professions and occupations, the social organization of the occupational groups. 9:20-10:40. 3 s.h. MR. PELLEGRIN

247. COMMUNITY AND SOCIETY.—This course seeks to provide a frame of reference for the analysis and ordering of facts pertaining to the diverse cultures of the world, the State, the world community, the Great Society, news, mass behavior, social problems, races and classes. 11:00-12:20. 3 s.h. MR. PELLEGRIN

SECOND TERM

92. GENERAL SOCIOLOGY.—An Introduction to the scientific study of social life, its origin, evolution, and organization as illustrated by the study of a number of concrete social problems. Prerequisite: Course 91. 11:00-12:20. 3 s.h. MR. ROY

241. SOCIAL STRATIFICATION.—The nature of hierarchical and vertical differentiation in the economic, political and prestige structures in modern societies. The interrelationship of class, status and power strata and their influence on social institutions, personality structure, and group and individual behavior. 9:20-10:40. 3 s.h. MR. ROY

ZOOLOGY

PROFESSOR KARL M. WILBUR, CHAIRMAN—224 BIOLOGY BUILDING (WEST CAMPUS); PROFESSOR EDWARD HORN, ACTING DIRECTOR OF GRADUATE STUDIES—06 BIOLOGY BUILDING (WEST CAMPUS)

All classes in Zoology are offered at the Duke University Marine Laboratory at Beaufort, North Carolina (Term I, June 10-July 15; Term II, July 16-August 20). Students who wish to avoid paying a late registration fee must have their registration completed in advance of these dates. For registration dates see *General Registration* pages 19-22 of this *Bulletin*. For detailed instructions and further information on these offerings see the *Bulletin of Duke University Marine Laboratory*.

For admission to candidacy for a master's degree in Zoology, a student should have completed an undergraduate major in Zoology (courses in General Science and Botany are not counted as a part of a Zoology major). This normally amounts to about twenty-four semester hours, which should be distributed among various fields of Zoology, and must include Vertebrate Zoology or Comparative Anatomy, Physiology, and Embryology, passed with creditable grades. A candidate should also have

completed at least one year of Chemistry. Work for the degree will require eighteen hours in advanced courses in Zoology, and six hours in another department for a minor, in addition to a thesis. Before registration for a degree, students should confer with the Director of Graduate Studies for the Department. Students not candidates for a degree may take courses offered if they have necessary prerequisites but may not count them toward a degree until an undergraduate major has been completed.

FIRST TERM (Duke Campus)

353. RESEARCH.—Hours to be arranged. 2-6 s.h. STAFF

FIRST TERM (Duke Marine Laboratory)

203. MARINE ECOLOGY.—A study of marine animals in relation to environment. Consideration of environmental factors, succession, rhythms, communities, intraspecific and interspecific relations, productivity, conservation problems, etc., concerned with animal life in the ocean. Lectures, reviews, conferences, field and laboratory work. 6 s.h. MR. GRAY

353. RESEARCH.—Hours to be arranged. 2-6 s.h. STAFF

SECOND TERM (Duke Campus)

353. RESEARCH.—Hours to be arranged. 2-6 s.h. STAFF

SECOND TERM (Duke Marine Laboratory)

250. PHYSIOLOGICAL ECOLOGY OF MARINE ANIMALS.—A study of the physiological responses of marine animals in relation to certain environmental factors and evolution. Animals representing numerous phyla and from various habitats are studied. Prerequisite: Zoology 151 or equivalent. 6 s.h. MR. VERNBERG

274. MARINE INVERTEBRATE ZOOLOGY.—A study of invertebrate animals that occur in the Beaufort region. A number of field trips will be made to a variety of habitats to study, collect, and classify animals in their natural environment. The structure and habits of living invertebrates, as well as their behavior under certain experimental conditions, will be studied in the laboratory. 6 s.h. MR. BOOKHOUT

353. RESEARCH. —Hours to be arranged. 2-6 s.h. STAFF

DUKE UNIVERSITY SUMMER SESSION APPLICATION FOR RESIDENCE HALL ROOM

Application for room reservations and all correspondence concerning such Reservation should be addressed to: Housing Bureau, Duke Station, Durham, North Carolina.

Room assignment will be made only upon the applicant's admission to the Summer Session, as certified by the Summer Session Office, and upon payment of full room rent. Applicants who expect to be in residence for longer than one term of the Summer Session are urged to make advance reservation for the entire period and thus avoid, to the extent that housing arrangements make it practicable, the necessity of moving from one room to another during the full term of residence.

See page 17 of Summer Session Bulletin for information concerning refunds of housing fees.

If the applicant requests a double room but gives no preference of roommate, Bureau officials will try to assign a roommate of seemingly congenial interests. It is understood, however, that the responsibility for getting and keeping a roommate rests with the applicant; otherwise, it will be necessary for him to move to a single room or to make the indicated financial adjustment.

Name..... Date.....

Present address..... Permanent address.....
(Address to which mail always will be forwarded)

Present position..... Address.....

Highest academic degrees earned.....

If you are in college now, give name of institution and your class:

.....

Will you be writing a thesis this summer? Yes..... No.....

Date of your expected arrival at Duke for the Summer Session.....

Number of weeks you expect to remain..... Type of room desired: Single..... Double.....

Name of roommate preferred, if any.....

Address.....

DIRECTIONS TO SUMMER SESSION APPLICANTS

All applicants for Summer Session courses who are not now in residence at Duke University must fill out accurately and in detail the form below and return it to the Director of the Summer Session. Preference in enrollment will be given to persons returning the form promptly, but a place in a particular course cannot be assured until all fees are paid. Undergraduates or graduates who are enrolled in a university or college other than Duke University and who are seeking to transfer summer session credits to the college in which they are matriculated should request a course approval form to be certified by their dean or registrar. Persons applying for admission to the Graduate School of Duke University should write the Dean of the Graduate School for the necessary forms in addition to completing the form below:

No. Approved Date.....

APPLICATION FOR ENROLLMENT IN THE DUKE UNIVERSITY SUMMER SESSION

Mr., Mrs., Miss.....

(Please Print)

Street address, Rural route, or P. O. Box.....

Post Office..... State.....

Nationality..... Race.....

Please reserve a place for me in the following courses listed in the Summer Session Bulletin.

Department	No. of Course	Title of Course

Name and address of High School from which you graduated.....

.....

Have you attended a college? Yes..... No.....

Name and address of college.....

Highest degree held:.....

Are you a candidate for a degree? Yes..... No.....

If yes, for which degree?.....

In what school or college of Duke University are you seeking to enroll (check one) :

Undergraduate credits	*Graduate* credits
☐ Trinity College (men)	☐ Graduate School, Arts and Sciences
☐ The Woman's College	☐ Divinity School
☐ College of Engineering	☐ School of Forestry
☐ Special or unclassified	☐ Special or unclassified
☐ Credits for transfer	☐ Credits for transfer

Have you applied for admission to the Graduate School?.....

Are you at present a college student?..... If so, where?.....

..... What class?.....

Are you a full-time teacher?.....

Name and address of school.....

Teaching position.....

Total number years teaching experience.....

Will your fees be paid by:

(a) Yourself.....

(b) Veterans' Administration, Public Law 346 or 16.....

(c) Funds received under Public Law 550.....

Have you attended previous Summer Sessions at Duke: Yes.....;

Years..... No.....

BULLETIN
OF
DUKE UNIVERSITY



The Graduate School of Arts and Sciences

CATALOGUE FOR 1960-61

VOLUME 32 February, 1960 NUMBER 4-A

Annual Bulletins

For Bulletin of Information for Prospective Students, apply to *The Registrar,* Duke University, Durham, N. C.

For Bulletin of Undergraduate Instruction, apply to *The Registrar,* Duke University, Durham, N. C.

For Bulletin of the College of Engineering, apply to *The Registrar,* Duke University, Durham, N. C.

For Bulletin of The Graduate School of Arts and Sciences, apply to *The Dean of the Graduate School,* Duke University, Durham, N. C.

For Bulletin of The School of Forestry, apply to *The Dean of the School of Forestry,* Duke University, Durham, N. C.

For Bulletin of The School of Law, apply to *The Dean of the School of Law,* Duke University, Durham, N. C.

For Bulletin of The School of Medicine, apply to *The Dean of the School of Medicine,* Duke University, Durham, N. C.

For Bulletin of The School of Nursing, apply to *The Dean of the School of Nursing,* Duke University, Durham, N. C.

For Bulletin of The Divinity School, apply to *The Dean of the Divinity School,* Duke University, Durham, N. C.

For Bulletin of The Summer Session, apply to *The Director of the Summer Session,* Duke University, Durham, N. C.

For General Bulletin of Duke University, apply to *The Registrar,* Duke University, Durham, N. C.

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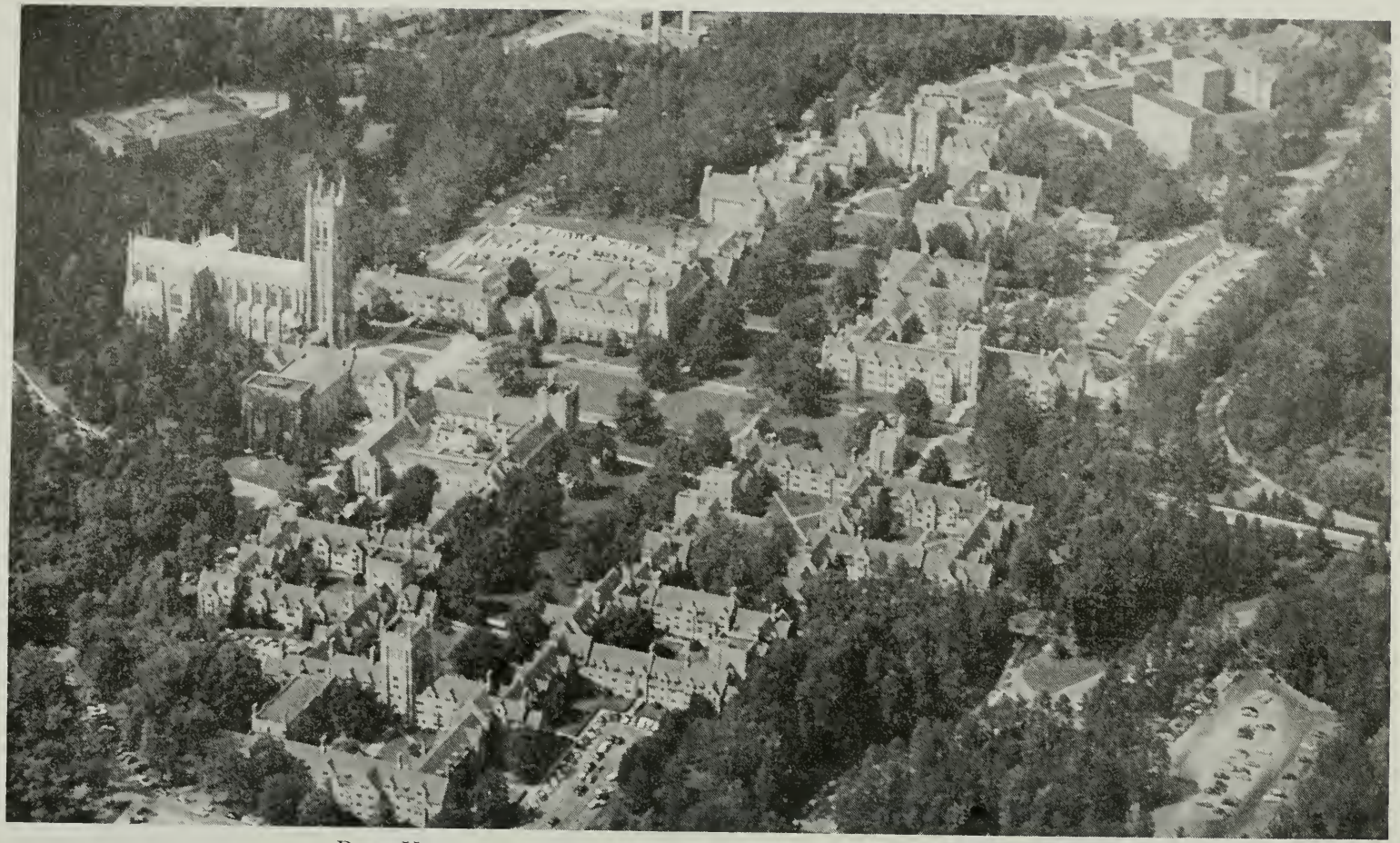
BULLETIN
OF
DUKE UNIVERSITY

THE GRADUATE SCHOOL
OF ARTS AND SCIENCES



1959-1960
CATALOGUE FOR 1960-1961

DURHAM, NORTH CAROLINA
1960



Duke University: West Campus with Duke Forest in Background

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Calendar of the Graduate School

Summer Session 1960

1960

May	3-4	Advance registration for current students for 1960 Summer Session (and for fall semester 1960)
June	10	Friday—Registration of students for Summer Session, first term.
June	11	Saturday—Instruction begins for Summer Session, first term.
June	23	Thursday—Final date for filing with the Graduate Office Statement of Intention to complete, during the first term, requirements for the Master's degree. If a thesis is to be presented, the title is to be filed at the same time as the Statement of Intention.
July	5-8	German examinations for candidates for graduate degrees. Candidates register in the Graduate School Office for these examinations not later than June 23.
July	6	Wednesday—French examinations for candidates for graduate degrees, 4:00 P.M., 233 Allen Building. Candidates register in the Graduate School Office not later than June 29.
July	15	Friday—First term of Summer Session ends.
July	16	Saturday—Registration of students for second term of Summer Session.
July	18	Monday—Instruction begins for second term of Summer Session.
July	28	Thursday—Final date for filing with the Graduate Office Statement of Intention to complete, during the second term, requirements for the Master's degree. If a thesis is to be presented, the title is to be filed at the same time as the Statement of Intention.
Aug.	20	Saturday—Second term of Summer Session ends.

Academic Year 1960-1961

Sept.	19	Monday—Reading, Vocabulary and Grammar Tests in French and German. French, 9:00 A.M., German, 10:15 A.M., both in 125 Engineering Building. (See page 21 for information.) Monday—English Tests for Foreign Students. 2:00 P.M., 125 Engineering Building.
Sept.	21	Wednesday—Registration of graduate students for first semester. Indoor Stadium.
Sept.	22	Thursday—Classes begin.
Oct.	17-21	German examinations for candidates for graduate degrees. Candidates register in the Graduate School Office for these examinations not later than October 5.
Nov.	23	Wednesday, 12:30 P.M.—Thanksgiving recess begins.
Nov.	28	Monday, 8:00 A.M.—Classes are resumed.
Dec.	11	Sunday—Founders Day.
Dec.	17	Saturday, 12:30 P.M.—Christmas recess begins.

1961

Jan.	3	Tuesday, 8:00 A.M.—Classes are resumed.
Jan.	6	Friday—French examination for candidates for graduate degrees, 4:00 P.M., place to be announced. Candidates register in the Graduate School Office for these examinations not later than December 16, 1960.
Jan.	10-16	Reading period.
Jan.	17	Tuesday—Final examinations begin.
Jan.	27	Friday—Final examinations end.
Jan.	31	Tuesday—Reading, Vocabulary and Grammar Tests in French and German for entering students, second semester. French, 10:30 A.M., German, 11:45 A.M., both in 125 Engineering Building. (See page 21 for information.)
Feb.	1	Wednesday—Registration for students not in residence during first semester and for current students who failed to pre-register. Indoor Stadium.
Feb.	2	Thursday—Classes are resumed.
March	1	Wednesday—Last day for applying for University fellowships, graduate assistantships, and graduate scholarships. Final date for filing with Graduate Office Statement of Intention of receiving advanced degree in June. Titles of theses and dissertations are to be filed concurrently with the Statement of Intention.
March	25	Saturday, 12:30 P.M.—Spring recess begins.
April	4	Tuesday, 8:00 A.M.—Classes are resumed.
April	14	Friday—French examinations for candidates for graduate degrees, 4:00 P.M., place to be announced. Candidates register in the Graduate School Office for these examinations not later than March 31.
April	14	Friday—Last day for submitting theses for degrees of Doctor of Philosophy and Doctor of Education.
May	1	Monday—Last day for submitting theses for degrees of Master of Arts, Master of Science, Master of Education, and Master of Arts in Teaching.
May	1-6	German examinations for candidates for graduate degrees. Candidates register in the Graduate School Office for these examinations not later than April 19.
May	8-13	Reading period.
May	20	Saturday—Final examinations begin.
May	31	Wednesday—Final examinations end.
June	3	Saturday—Commencement begins.
June	4	Sunday—Commencement sermon.
June	5	Monday—Graduating Exercises.

LAST DATES FOR APPLYING FOR ADMISSION

Fall Semester, with Award	February 15
Fall Semester, Admission Only	August 1
Spring Semester	January 1
Summer Session, First Term	May 12
Summer Session, Second Term	June 16

1960

JULY

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17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

AUGUST

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28	29	30	31			

SEPTEMBER

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OCTOBER

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30	31					

NOVEMBER

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DECEMBER

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1961

JANUARY

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FEBRUARY

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12	13	14	15	16	17	18
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26	27	28				

MARCH

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APRIL

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MAY

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JUNE

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JULY

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AUGUST

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SEPTEMBER

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OCTOBER

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NOVEMBER

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DECEMBER

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31						

Officers of the University Administration

Arthur Hollis Edens, Ph.D., LL.D.
President of the University — 2138 Myrtle Drive

Paul Magnus Gross, Ph.D.
Vice-President in the Division of Education — 3816 Dover Road, Hope Valley

Charles Edward Jordan, A.B., LL.D.
Vice-President in the Division of Public Relations — 615 West Campus Drive

Herbert James Herring, A.M., LL.D.
Vice-President in the Division of Student Life — 2010 Myrtle Drive

Marcus Edwin Hobbs, Ph.D.
Dean of the University — 115 Pinecrest Road

Alfred Smith Brower, A.B.
Treasurer — 614 West Campus Drive

Gerhard Chester Henricksen, CPA
Business Manager and Comptroller — 216 Forest Wood Drive

John Marion Dozier, A.B.
Secretary of the University — 2510 Wrightwood Avenue

Graduate School Administration

Allan Murray Cartter, Ph.D.
Dean of the Graduate School of Arts and Sciences — 1308 Dwire Place

Francis Ezra Bowman, Ph.D.
Secretary of the Graduate Faculty
Assistant Dean and Director of Admissions, Graduate School of Arts and Sciences — 2114 Woodrow Street

Benjamin Edward Powell, Ph.D.
Librarian — 3609 Hathaway Road, Hope Valley

Richard Lovejoy Tuthill, Ed.D.
University Registrar — 2709 Dogwood Road

EXECUTIVE COMMITTEE OF THE GRADUATE FACULTY

Allan Murray Cartter, Ph.D.
Dean of the Graduate School of Arts and Sciences, ex officio

Francis Ezra Bowman, Ph.D.
Secretary of the Graduate Faculty, ex officio

Frank T. deVyver, Ph.D.

Clarence Gohdes, Ph.D.

Gregory A. Kimble, Ph.D.

Paul J. Kramer, Ph.D.

Harold T. Parker, Ph.D.

Richard L. Predmore, D.M.L.

Instructional Staff

MEMBERS OF THE GRADUATE SCHOOL FACULTY
(as of November 20, 1959)

The date denotes the first year of service at Duke University.

*Frances Dorothy Acomb, (1945) Ph.D., *Associate Professor of History*
Donald Keith Adams, (1931) Ph.D., *Professor of Psychology*
John Richard Alden, (1955) Ph.D., *Professor of History*
Hugh Anderson, (1957) Ph.D., *Associate Professor of Biblical Theology*
†Lewis Edward Anderson, (1936) Ph.D., *Professor of Botany*
Roger Fabian Anderson, (1950) Ph.D., *Professor of Forest Entomology*
H. G. Andrewartha, (1959) D.Sc., *Visiting Professor of Zoology*
John Leslie Artley, (1955) D. Eng., *Associate Professor of Electrical Engineering*
Kurt W. Back, (1959) Ph.D., *Associate Professor of Sociology*
Joseph Randle Bailey, (1946) Ph.D., *Associate Professor of Zoology*
Katharine May Banham, (1946) Ph.D., *Associate Professor of Psychology*
Paull Franklin Baum, (1922) Ph.D., *James B. Duke Professor Emeritus of English*
Charles A. Baylis, (1952) Ph.D., *Professor of Philosophy*
William Waldo Beach, (1946) B.D., Ph.D., *Professor of Christian Ethics*
Joseph Willis Beard, (1937) M.D., *Associate Professor of Virology*
Robert Beare, (1959) Ph.D., *Assistant Professor of German*
Roland Frederick Becker, (1951) Ph.D., *Associate Professor of Anatomy*
Frederick Bernheim, (1930) Ph.D., *Professor of Pharmacology*
Mrs. Mary L. C. Bernheim, (1930) Ph.D., *Associate Professor of Biochemistry*
Merle M. Bevington, (1942) Ph.D., *Professor of English*
Lucius Aurelius Bigelow, (1929) Ph.D., *Professor of Chemistry*
William Dwight Billings, (1952) Ph.D., *Professor of Botany*
Martin Lee Black, Jr., (1930) M.B.A., C.P.A., *Professor of Accounting*
Martin M. Block, (1952) Ph.D., *Associate Professor of Physics*
Hugo Leander Blomquist, (1920) Ph.D., *Professor Emeritus of Botany*
Edward Claude Bolmeier, (1948) Ph.D., *Professor of Education*
Charles Alan Boneau, (1957) Ph.D., *Assistant Professor of Psychology*
Cazlyn Green Bookhout, (1935) Ph.D., *Professor of Zoology*
‡Lloyd J. Borstelmann, (1953) Ph.D., *Assistant Professor of Psychology*
Francis Ezra Bowman, (1945) Ph.D., *Associate Professor of English*
Benjamin Boyce, (1950) Ph.D., *Professor of English*
Thomas Allen Boyle, Jr., (1957) M.S. in M.E., *Associate Professor of Mechanical Engineering*
†Charles Kilgo Bradsher, (1939) Ph.D., *Professor of Chemistry*
Ralph Braibanti, (1953) Ph.D., *Professor of Political Science*
Jack Brehm, (1958) Ph.D., *Assistant Professor of Psychology*

*Absent on sabbatical leave, fall semester. 1959-60.
†Absent on sabbatical leave, 1959-60
‡Absent on leave, 1959-60

Roberta Florence Brinkley, (1947) Ph.D., LL.D., *Professor of English*
Frances Campbell Brown, (1931) Ph.D., *Professor of Chemistry*
*William H. Brownlee, (1948) Th.M., Ph.D., *Associate Professor of Old Testament*
Joseph A. Bryant, (1959) Ph.D., *Associate Professor of English*
†Michael J. Buckingham, (1956) Ph.D., *Visiting Assistant Professor of Physics*
William Lawrence Byrne, (1954) Ph.D., *Assistant Professor of Biochemistry*
Leonard Carlitz, (1932) Ph.D., *Professor of Mathematics*
John Winder Carr, Jr., (1926) Ph.D., *Professor of Education*
‡Eber Malcolm Carroll, (1923) Ph.D., *James B. Duke Professor of History*
Allan Murray Cartter, (1952) Ph.D., *Professor of Economics*
William H. Cartwright, (1951) Ph.D., *Professor of Education*
Juan R. Castellano, (1947) D.F.L., *Professor of Romance Languages*
Clifton C. Cherpack, (1958) Ph.D., *Associate Professor of Romance Languages*
Benjamin Guy Childs, (1924) M.A., *Professor Emeritus of Education*
Kenneth Willis Clark, (1931) Ph.D., *Professor of New Testament*
§Romane Lewis Clark, (1953) Ph.D., *Associate Professor of Philosophy*
Paul Hibbert Clyde, (1937) Ph.D., *Professor of History*
Louis David Cohen, (1946) Ph.D., *Professor of Psychology*
§Robert Taylor Cole, (1935) Ph.D., *James B. Duke Professor of Political Science*
Joel G. Colton, (1947) Ph.D., *Associate Professor of History*
¶Robert Merle Colver, (1953) Ed.D., *Associate Professor of Education*
Norman Francis Conant, (1935) Ph.D., *Professor of Mycology; Associate Professor of Bacteriology*
**Robert Howe Connery, (1949) Ph.D., *Professor of Political Science*
¶Thomas Howard Cordle, (1950) Ph.D., *Associate Professor of Romance Languages*
Frederick A. G. Cowper, (1918) Ph.D., *Professor Emeritus of Romance Languages*
William L. Culberson, (1955) Ph.D., *Assistant Professor of Botany*
John Shelton Curtiss, (1945) Ph.D., *Professor of History*
Robert Earle Cushman, (1945) B.D., Ph.D., *Professor of Systematic Theology*
Bingham Dai, (1943) Ph.D., *Professor of Psychology*
Paul G. Daston, (1958) Ph.D., *Assistant Professor of Psychology*
Eugene A. Davidson, (1958) Ph.D., *Assistant Professor of Biochemistry*
††Gifford Davis, (1930) Ph.D., *Professor of Romance Languages*
Frank Traver de Vyver, (1935) Ph.D., *Professor of Economics*
Donald J. Dewey, (1950) M.A., *Associate Professor of Economics*
Irving Diamond, (1958) Ph.D., *Associate Professor of Psychology*
Neal Dow, (1934) Ph.D., *Professor of Romance Languages*
Francis George Dressel, (1929) Ph.D., *Professor of Mathematics*
Kenneth Lindsay Duke, (1940) Ph.D., *Associate Professor of Anatomy*
Marion M. Duncan, (1956) Ph.D., *Visiting Assistant Professor of Physics*
Arthur Stephen Dunning, (1959) Ph.D., *Assistant Professor of Education*
¶Robert F. Durden, (1952) Ph.D., *Assistant Professor of History*
George Sharp Eadie, (1930) Ph.D., *Professor of Physiology and Pharmacology*
Howard Easley, (1930) Ph.D., *Associate Professor Emeritus of Education*
William Whitfield Elliott, (1925) Ph.D., *Professor of Mathematics*
Ernest Elsevier, (1950) M.S. in M.E., *Associate Professor of Mechanical Engineering*

*Resigned, August 31, 1959
†Resigned June 30, 1959
‡Retired, August 31. 1959
§Absent on sabbatical leave, 1959-60
¶Absent on sabbatical leave, fall semester, 1959-60
**Absent on leave, 1959-60
††Absent on sabbatical leave, spring semester, 1959-60

John Wendell Everett, (1932) Ph.D., *Professor of Anatomy*
*William Martin Fairbank, (1952) Ph.D., *Associate Professor of Physics*
Amerigo Farina, (1958) Ph.D., *Assistant Professor of Psychology*
John Morton Fein, (1950) Ph.D., *Associate Professor of Romance Languages*
Charles A. Fenton, (1958) Ph.D., *Professor of English*
†Arthur Bowles Ferguson, (1939) Ph.D., *Associate Professor of History*
Charles E. Ferguson, (1957) Ph.D., *Assistant Professor of Economics*
John Hurt Fisher, (1955) Ph.D., *Professor of English*
Donald J. Fluke, (1957) Ph.D., *Associate Professor of Zoology*
*Andrew Durwood Foster, (1954) B.D., *Associate Professor of the History and Philosophy of Religion*
Thomas M. Gallie, Jr., (1954-55; 1956) Ph.D., *Assistant Professor of Mathematics*
William Henry Gardner, Jr., (1953) M.Eng., *Associate Professor of Civil Engineering*
Norman Garmezy, (1950) Ph.D., *Associate Professor of Psychology*
W. Scott Gehman, Jr., (1954) Ph.D., *Associate Professor of Psychology in Education*
John Jay Gergen, (1936) Ph.D., *Professor of Mathematics*
Allan H. Gilbert, (1920) Ph.D., *Professor Emeritus of English*
George Glockler, (1952) Ph.D., *Visiting Lecturer in Chemistry*
Clarence Gohdes, (1930) Ph.D., *Professor of English*
Walter Gordy, (1946) Ph.D., LL.D., D.H.C., *Professor of Physics*
‡Richard Babson Grant, (1952) Ph.D., *Assistant Professor of Romance Languages*
Irving Emery Gray, (1930) Ph.D., *Professor of Zoology*
John R. Gregg, (1957) Ph.D., *Professor of Zoology*
Eugene Greuling, (1948) Ph.D., *Associate Professor of Physics*
Paul Magnus Gross, (1919) Ph.D., *William Howell Pegram Professor of Chemistry*
Norman Guttman, (1951) Ph.D., *Associate Professor of Psychology*
Frank Gregory Hall, (1926-42; 1945) Ph.D., *Professor of Physiology and Pharmacology*
Louise Hall, (1931) S.B.Arch., Ph.D., *Associate Professor of Architecture*
‡John Hamilton Hallowell, (1942) Ph.D., *Professor of Political Science*
William Baskerville Hamilton, (1936) Ph.D., *Professor of History*
Philip Handler, (1939) Ph.D., *Professor of Biochemistry and Nutrition*
Frank Allan Hanna, (1948) Ph.D., *Professor of Economics*
George Thomas Hargitt, (1930) Ph.D., Sc.D., *Professor Emeritus of Zoology*
§Ellwood Scott Harrar, (1936) Ph.D., *Professor of Wood Technology*
Hornell Norris Hart, (1938) Ph.D., *Professor Emeritus of Sociology*
Charles Cleveland Hatley, (1917) Ph.D., *Professor Emeritus of Physics*
Charles Roy Hauser, (1929) Ph.D., *Professor of Chemistry*
Simeon K. Heninger, (1955) Ph.D., *Assistant Professor of English*
Stuart C. Henry, (1959) Ph.D., *Associate Professor of American Christianity*
Duncan Charteris Hetherington, (1930) Ph.D., M.D., *Professor of Anatomy*
Douglas Greenwood Hill, (1931) Ph.D., *Professor of Chemistry*
Hans J. Hillerbrand, (1959) Ph.D., *Assistant Professor of Modern European Christianity*
Marcus Edwin Hobbs, (1935) Ph.D., *Professor of Chemistry*
Irving B. Holley, Jr., (1947) Ph.D., *Associate Professor of History*
Calvin Bryce Hoover, (1925) Ph.D., Litt.D., *James B. Duke Professor of Economics*

*Resigned, August 31, 1959
†Absent on sabbatical leave, 1959-60
‡Absent on sabbatical leave, spring semester, 1959-60
§Absent on sabbatical leave, fall semester, 1959-60

Edward Charles Horn, (1946) Ph.D., *Professor of Zoology*
Jay Broadus Hubbell, (1927) Ph.D., Litt.D., *Professor Emeritus of English*
Wayland Elroy Hull, (1953) Ph.D., *Assistant Professor of Physiology*
*Harold J. Humm, (1954) Ph.D., *Associate Professor of Botany*
*Don Dougan Humphrey, (1945) Ph.D., *Professor of Economics*
Mrs. Wanda Sanborn Hunter, (1947) Ph.D., *Associate Professor of Zoology*
Allan S. Hurlburt, (1956) Ph.D., *Professor of Education*
William H. Irving, (1936) B.A., (Oxon.), Ph.D., *Professor Emeritus of English*
†Howard Eikenberry Jensen, (1931) B.D., Ph.D., *Professor of Sociology*
Bronislas de Leval Jezierski, (1958) Ph.D., *Assistant Professor of Russian Language and Literature*
Terry W. Johnson, Jr., (1954) Ph.D., *Assistant Professor of Botany*
‡Edward Ellsworth Jones, (1953) Ph.D., *Associate Professor of Psychology*
§Brady Rimbey Jordan, (1927) Ph.D., *Professor of Romance Languages*
Henry Kamin, (1948) Ph.D., *Assistant Professor of Biochemistry*
Van Leslie Kenyon, Jr., (1945) M.M.E., *Professor of Mechanical Engineering*
Alan C. Kerckhoff, (1958) Ph.D., *Associate Professor of Sociology*
Gregory Adams Kimble, (1952) Ph.D., *Professor of Psychology*
Peter H. Klopfer, (1958) Ph.D., *Assistant Professor of Zoology*
¶William H. Knisely, (1956) Ph.D., *Associate Professor of Anatomy*
Sigmund Koch, (1942-47; 1948) Ph.D., *Professor of Psychology*
Clarence Ferdinand Korstian, (1930) Ph.D., *Professor Emeritus of Silviculture*
Jack L. Kostyo (1959) Ph.D., *Assistant Professor of Physiology*
Paul Jackson Kramer, (1931) Ph.D., *James B. Duke Professor of Botany*
‡William R. Krigbaum, (1952) Ph.D., *Associate Professor of Chemistry*
Charles Albert Krummel, (1922) Ph.D., *Professor Emeritus of German*
*George Frederic Kuder, (1948) Ph.D., *Professor of Psychology*
Weston LaBarre, (1946) Ph.D., *Professor of Anthropology*
‡Creighton Lacy, (1953) B.D., Ph.D., *Associate Professor of Missions and Social Ethics*
Martin Lakin (1958) Ph.D., *Assistant Professor of Psychology*
Charles Earl Landon, (1926) Ph.D., *Professor of Economics*
John Tate Lanning, (1927) Ph.D., *Professor of History*
William Thomas Laprade, (1909) Ph.D., *Professor Emeritus of History*
John E. Larsh, Jr., (1943) Sc.D., *Associate Professor of Parasitology*
Harold Walter Lewis, (1949) Ph.D., *Professor of Physics*
Daniel A. Livingstone, (1956) Ph.D., *Associate Professor of Zoology*
E. Croft Long (1956) M.D., *Assistant Professor of Physiology and Pharmacology*
John C. McKinney, (1957) Ph.D., *Professor of Sociology*
§Jonathon Collins McLendon, (1952) Ph.D., *Associate Professor of Education*
Robert McLeod (1955) Ph.D., *Assistant Professor of Mathematics*
John Nelson Macduff, (1956) M.M.E., *Professor of Mechanical Engineering*
Alan Krebs Manchester, (1929) Ph.D., *Professor of History*
Clyde L. Manschreck, (1954) B.D., Ph.D., *Associate Professor of Undergraduate Religion*
Joseph Eldridge Markee, (1943) Ph.D., *James B. Duke Professor of Anatomy*

*Absent on leave, 1959-60
†Retired, August 31, 1959
‡Absent on sabbatical leave, 1959-60
§Absent on sabbatical leave, fall semester, 1959-60
¶Resigned, July 31, 1959

Sidney David Markman, (1947) Ph.D., *Associate Professor of Art History and Archaeology*
Otto Meier, Jr., (1934) Ph.D., *Professor of Electrical Engineering*
Johannes Horst Max Meyer, (1959) D.Sc., *Assistant Professor of Physics*
Montrose J. Moses, (1959) Ph.D., *Associate Professor of Anatomy*
Aubrey Willard Naylor, (1952) Ph.D., *Professor of Botany*
*Glenn Robert Negley, (1946) Ph.D., *Professor of Philosophy*
Ernest William Nelson, (1926) Ph.D., *Associate Professor of History*
Henry Winston Newson, (1948) Ph.D., *Professor of Physics*
Walter McKinley Nielsen, (1925) Ph.D., *James B. Duke Professor of Physics*
Walter D. Obrist, (1956) Ph.D., *Assistant Professor of Psychology*
Henry John Oosting, (1932) Ph.D., *Professor of Botany*
John R. Overman, (1955) M.D., *Associate Professor of Bacteriology*
Harry Ashton Owen, Jr., (1951) M.S.E., *Associate Professor of Electrical Engineering*
Harold Talbot Parker, (1939) Ph.D., *Professor of History*
†Oscar A. Parsons, (1954) Ph.D., *Associate Professor of Psychology*
Percy Herbert Partridge, (1959) M.A., *Visiting Professor of Political Science*
Ransom Rathbone Patrick, (1954) M.F.A., *Professor of Aesthetics and Art*
Robert Leet Patterson, (1945) B.D., Ph.D., *Professor Emeritus of Philosophy*
William Bernard Peach, (1951) Ph.D., *Assistant Professor of Philosophy*
Talmadge Lee Peele, (1939) M.D., *Associate Professor of Anatomy*
‡Kenneth E. Penrod, (1950) Ph.D., *Professor of Physiology and Pharmacology*
Harold Sanford Perry, (1932) Ph.D., *Associate Professor of Botany*
Ray C. Petry, (1937) Ph.D., LL.D., *Professor of Church History*
Olan Lee Petty, (1952) Ph.D., *Associate Professor of Education*
Jane Philpott, (1951) Ph.D., *Associate Professor of Botany*
Leo Pine, (1957) Ph.D., *Assistant Professor of Microbiology*
Jacques C. Poirier, (1955) Ph.D., *Assistant Professor of Chemistry*
Benjamin Edward Powell, (1946) Ph.D., *Librarian*
Richard Lionel Predmore, (1950) D.M.L., *Professor of Romance Languages*
Jack J. Preiss (1959) Ph.D., *Associate Professor of Sociology*
James Ligon Price, Jr., (1952) Ph.D., *Associate Professor of Undergraduate Religion*
Louis DuBose Quin (1956) Ph.D., *Assistant Professor of Chemistry*
Charles William Ralston, (1953) Ph.D., *Associate Professor of Forest Soils*
Robert Stanley Rankin, (1927) Ph.D., *Professor of Political Science*
William Walter Rankin, Jr., (1926) M.A., *Professor Emeritus of Mathematics*
Guy H. Ransom, (1959) Ph.D., *Visiting Associate Professor of Christian and Social Ethics*
Benjamin Ulysses Ratchford, (1928) Ph.D., *Professor of Economics*
Thomas D. Reynolds, (1953) Ph.D., *Assistant Professor of Mathematics*
Henry Stoutte Roberts, Jr., (1948) Ph.D., *Associate Professor of Zoology*
John Henderson Roberts, (1931) Ph.D., *Professor of Mathematics*
Hermann R. Robl, (1959) Dr. habil., *Visiting Assistant Professor of Physics*
Eliot H. Rodnick, (1949) Ph.D., *Professor of Psychology*
Robert Samuel Rogers, (1937) Ph.D., F.A.A.R., *Professor of Latin*
Theodore Ropp, (1938) Ph.D., *Associate Professor of History*
Robert S. Rowe, (1956) D.Eng., *J. A. Jones Professor of Civil Engineering*

*Absent on sabbatical leave, spring semester, 1959-60
†Resigned, August 31, 1959
‡Resigned, June 30, 1959

Donald Francis Roy, (1950) Ph.D., *Associate Professor of Sociology*
Mabel F. Rudisill, (1948) Ph.D., *Associate Professor of Education*
Ralph Wayne Rundles, (1945) Ph.D., M.D., *Professor of Medicine*
Herman Salinger, (1955) Ph.D., *Professor of German*
Muriel I. Sandeen, (1950) Ph.D., *Assistant Professor of Zoology*
Charles Richard Sanders, (1937) Ph.D., *Professor of English*
John Henry Saylor, (1928) Ph.D., *Professor of Chemistry*
*Theodor Schmidt, (1958) Ph.D., *Visiting Assistant Professor of Mathematics*
Mrs. Bodil Schmidt-Nielsen, (1956) D.D.S., Dr.Odont., Dr.Phil., *Associate Research Professor of Zoology*
†Knut Schmidt-Nielsen, (1952) Mag.Sc., Dr.Phil., *Professor of Zoology*
George C. Schoolfield, (1959) Ph.D., *Associate Professor of German*
Francis Xavier Schumacher, (1937) B.S., *Professor of Forestry*
‡George William Schwert, (1946) Ph.D., *Professor of Biochemistry*
§Lambert Armour Shears, (1927) Ph.D., *Professor of German*
Joseph R. Shoenfield, (1952) Ph.D., *Assistant Professor of Mathematics*
Edward Christian Simmons, (1947) Ph.D., *Professor of Economics*
Allan P. Sindler, (1959) Ph.D., *Associate Professor of Political Science*
David Tillerson Smith, (1930) M.D., Litt.D., *James B. Duke Professor of Bacteriology*
Grover C. Smith, (1952) Ph.D., *Assistant Professor of English*
Hilrie Shelton Smith, (1931) Ph.D., D.D., Litt.D., *James B. Duke Professor of American Religious Thought*
Joel Smith, (1958) Ph.D., *Associate Professor of Sociology*
Peter Smith, (1959) Ph.D., *Assistant Professor of Chemistry*
¶Robert Sidney Smith, (1932) Ph.D., *Professor of Economics*
Hersey Everett Spence, (1918) B.D., D.D., Litt.D., *Professor Emeritus of Religious Education*
Joseph John Spengler, (1934) Ph.D., *James B. Duke Professor of Economics*
Charles D. Spielberger, (1955) Ph.D., *Assistant Professor of Psychology*
Hertha D. E. Sponer, (1935) Ph.D., *Professor of Physics*
Harold P. Stephenson, (1957) Ph.D., *Associate Professor of Mechanical Engineering*
Lionel Stevenson, (1955) B.Litt. (Oxon.) Ph.D., F.R.S.L., *James B. Duke Professor of English*
William Franklin Stinespring, (1936) Ph.D., *Professor of Old Testament*
**Hans H. Strupp, (1958) Ph.D., *Visiting Lecturer in Psychology*
Howard Austin Strobel, (1948) Ph.D., *Associate Professor of Chemistry*
*Hans H. Strupp, (1958) Ph.D., *Visiting Lecturer in Psychology*
Wippert Arnot Stumpf, (1948) Ph.D., *Associate Professor of Education*
John Dennis Sullivan, (1959) Ph.D., *Assistant Professor of Wood Technology*
Elizabeth Read Sunderland, (1939-42; 1943) Ph.D., *Associate Professor of Art*
‡Wolfgang Taraba, (1956) Ph.D., *Assistant Professor of German*
Haywood Maurice Taylor, (1930) Ph.D., *Associate Professor of Biochemistry*
††Joseph Miller Thomas, (1930) Ph.D., *Professor of Mathematics*
Edgar Tristram Thompson, (1935) Ph.D., *Professor of Sociology*
James Nardin Truesdale, (1930) Ph.D., *Professor of Greek*

*Resigned, January 31, 1959
†Absent on sabbatical leave, 1959-60
‡Resigned, August 31, 1959
§Retired, August 31, 1959
¶Absent on leave, 1959-60
**Resigned, May 31, 1959
††Absent on sabbatical leave, spring semester, 1959-60

*Arlin Turner, (1953) Ph.D., *Professor of English*
Charles Rowe Vail, (1939) Ph.D., *Professor of Electrical Engineering*
F. John Vernberg, (1951) Ph.D., *Assistant Professor of Zoology*
Patrick R. Vincent, (1954) Ph.D., *Assistant Professor of Romance Languages*
Clement Vollmer, (1926) Ph.D., *Professor Emeritus of German*
Herbert von Beckerath, (1935) Ph.D., *Professor Emeritus of Economics and Political Science*
†Warren Chase Vosburgh, (1928) Ph.D., *Professor of Chemistry*
Loring Baker Walton, (1929) Lic. és L., Ph.D., *Professor of Romance Languages*
Calvin L. Ward, (1952) Ph.D., *Assistant Professor of Zoology*
Charles Eugene Ward, (1927) Ph.D., *Professor of English*
‡Seth L. Warner, (1955) Ph.D., *Assistant Professor of Mathematics*
Richard Lyness Watson, Jr., (1939) Ph.D., *Associate Professor of History*
Vernon Elgin Way, (1930) A.M., M.A., *Associate Professor of Greek*
Wilfred Dunbar Webb, (1959) Ph.D., *Visiting Asssociate Professor of Political Science*
Henry Weitz, (1950) Ed.D., *Associate Professor of Education*
Paul Welsh, (1948) Ph.D., *Associate Professor of Philosophy*
Robert W. Wheat, (1956) Ph.D., *Associate Professor of Biochemistry*
Alban Gregory Widgery, (1930) M.A., *Professor Emeritus of Philosophy*
Karl Milton Wilbur, (1946) Ph.D., *Professor of Zoology*
Robert L. Wilbur, (1957) Ph.D., *Assistant Professor of Botany*
Pelham Wilder, Jr., (1949) Ph.D., *Associate Professor of Chemistry*
Mrs. Hilda Pope Willett, (1948) Ph.D., *Associate Professor of Bacteriology*
James W. Williams, (1937) M.S., *Professor of Civil Engineering*
§Robert Marshall Williamson, (1951) Ph.D., *Assistant Professor of Physics*
Neil L. Wilson, (1957), Ph.D., *Assistant Professor of Philosophy*
Robert Renbert Wilson, (1925) Ph.D., LL.D., *Professor of Political Science*
Thomas George Wilson, (1959) D.Sc., *Associate Professor of Electrical Engineering*
Frederick Adolphus Wolf, (1927) Ph.D., *James B. Duke Professor Emeritus of Botany*
Frank Wilson Woods, (1958), Ph.D., *Assistant Professor of Silviculture*
Robert Hilliard Woody, (1929) Ph.D., *Professor of History*
William P. Yohe, (1958) Ph.D., *Assistant Professor of Economics*
James G. Yoho, (1957) Ph.D., *Associate Professor of Forest Economics*
Karl Edward Zener, (1928) Ph.D., *Professor of Psychology*

*Absent on sabbatical leave, spring semester, 1959-60
†Retired, August 31, 1959
‡Absent on leave, 1959-60
§Absent on sabbatical leave, 1959-60

General Regulations Governing Graduate Study

Admission

PREREQUISITES. A student seeking admission to the Graduate School of Arts and Sciences of Duke University must have received an A.B. or B.S. degree (or the equivalent in the case of foreign students) from an accredited institution. His undergraduate program should be well rounded and of such quality as to give positive evidence of capacity for graduate study. Normally he should have majored in the area of his intended graduate study. Many departments (see Courses of Instruction, pp. 51 ff.) list specific prerequisites. Students are urged to anticipate at least one of the language requirements (see pp. 21-23).

STUDENTS REQUIRING ADMISSION. Admission is required of 1) students who intend to pursue study toward a degree offered by the Graduate School, 2) all other students who desire credit for whatever purpose for graduate courses—except students who register only in the Summer Session.

PROCEDURE FOR ALL APPLICANTS. A student seeking admission to the Graduate School should request the Dean of the Graduate School to send an application blank. This he should fill out completely and return promptly. In addition he should provide the following supporting documents: (1) a transcript or transcripts of all his undergraduate and graduate work mailed directly by the registrar to the Dean; (2) as soon as possible, supplementary transcripts showing completion of work not completed when the earlier transcript was made; (3) three letters of recommendation written by persons best qualified to judge him as a prospective graduate student and mailed directly to the Dean; (4) scores on the aptitude and major subject Graduate Record Examinations, always acceptable to strengthen the application and always to be reported if the examinations have been taken, desired but not required by the Departments of Biochemistry, Economics, Psychology, and Sociology, and required by the Department of Philosophy. (Information on times and places of Graduate Record Examinations can be provided

at the appplicant's college or by the Educational Testing Service, 20 Nassau Street, Princeton, New Jersey.)

ADDITIONAL PROCEDURE FOR FOREIGN STUDENTS. Fully qualified students from outside the United States are welcomed in the Graduate School to take courses and in many instances to study toward a degree. In applying for admission the foreign student should, in addition to the information required of all students, submit with his application (1) if his native language is not English, a statement by a qualified official that the applicant can read, write, speak, and understand English well enough to pursue a program of graduate study, (2) a statement certified by a responsible person that his finances are sufficient to maintain him during his stay at Duke University, and (3) a statement by a qualified medical doctor describing any emotional or physical illness the applicant has had during the previous five years.

All foreign students whose native language is not English will be examined during their first registration period for competence in the use of oral and written English. Until competence is determined, admission and arrangements for an award involving teaching must remain provisional. Such students as are found to lack the necessary competence will be required to enroll in the three-unit non-credit course English for Foreign Students and to reduce the course or research program three units if necessary.

CLOSING DATES FOR APPLICATIONS. Because applications cannot be reviewed until all required supporting documents are filed, applications should be submitted at least *two weeks* before the closing dates listed below:

Fall semester, admission and award	February 15
Fall semester, admission only	August 1
Spring semester, admission only	January 1
Summer Session,* First Term	May 10
Summer Session,* Second Term	June 16

NOTIFICATION AND STATUS. When the application is approved, the student will receive a letter of admission and an acceptance form. The process of admission is not complete until the statement of acceptance has been returned.

Applicants who are admitted will be offered full admission, provisional admission, or non-degree admission. *Provisional admission* is offered to students who (1) appear to warrant admission but who

* Students seeking admission to the Graduate School for study in the Summer Session should make application to the Dean of the Graduate School as well as to the Director of the Summer Session. It is the applicant's responsibility to make certain that his application is complete and in order before the dates specified.

do not fully comply with admission requirements, for a trial period of one semester or a minimum of 12 hours of course work, or (2) are admissible except that the application lacks a letter of recommendation, a supplementary transcript, or required test scores, or some other required information. *Non-degree admission* is offered to students who (1) have no intention of taking an advanced degree at Duke University but wish to take courses for accreditation, for transfer to other institutions, or for other purposes, (2) do not fully meet admission requirements but wish to further their academic interests, and (3) who apply late and must register before the application can be fully considered. Graduate credit earned under *provisional status* may be applied toward an advanced degree at Duke University if and when upon review the student is granted full admission; graduate credit earned under *non-degree status* may not be applied toward an advanced degree at Duke University. Late applicants ((3) above) will be granted full admission if admission can be completed within two weeks of registration.

Registration

WHO MUST REGISTER. (1) All students who enter course work or residence for credit; (2) all students who have completed minimum requirements for an advanced degree, but continue to use the facilities of the University in their research; (3) all students in *in absentia* status; (4) all students who wish merely to audit a course or courses.

REGISTRATION. After the applicant has received notification of his admission to the Graduate School and has returned his statement of acceptance of admission, he may present himself for registration. During the registration periods, announced in the *Bulletin,* he first confers with the Director of Graduate Studies of his major department, who prepares a course card, listing the course work to be taken during the semester. The student then presents this course card to registration officials, who enroll him officially in his courses. (For procedure for graduate students of the Consolidated University of North Carolina who wish to enroll in graduate courses at Duke University, see below p. 19.)

LATE REGISTRATION. All students are expected to register at the time stated in the *Bulletin. Those registering late are subject to a late registration fee of five dollars.*

CHANGE OF REGISTRATION. During the academic year within a period of fourteen days from the specified day of registration, students may change their schedules with the approval of the Director of Graduate Studies.

Grades, Hours, and Credits

Although ideally graduate study is principally individual reading, research, and laboratory experimentation under guidance, academic progress in the United States is generally measured and recorded in terms of course hours and credits. Peculiar to graduate study is the term *residence,* also generally measured in hours, to designate individual study apart from courses, such as writing a thesis and preparing for general examinations. Since September 1959 in this Graduate School credit for courses and seminars, research, and residence, and corresponding tuition and fees have been stated in terms of UNITS. According to conventional measurement ONE UNIT is equivalent to ONE SEMESTER HOUR. Thus a course previously described as carrying a credit of 3 s.h. now carries a credit of 3 units.

CREDITS EARNED OUTSIDE THIS GRADUATE SCHOOL.

(1) *Graduate Credit Earned before the A.B. Degree Is Granted.* Ordinarily no credit will be allowed for graduate courses earned before a student has been awarded his A.B. or B.S. degree. However, an undergraduate student at Duke University who, at the beginning of his final semester, lacks no more than 9 semester hours of fulfilling the requirements for the A.B. or B.S. degree, may obtain permission from the Dean of the Graduate School to enroll for graduate courses sufficient to bring his total program to fifteen hours a week. Such graduate courses will be credited toward the A.M., M.S., M.Ed., or M.A.T. degree, provided that the student meets the requirements for admission to the Graduate School, and that he is duly registered in the Graduate School at the beginning of that term.

(2) *Transfer of Graduate Credits.* Credit for graduate course work earned at another institution will be determined only after a student has spent one semester at Duke University. After completing his first semester, the student should file a request that his credits be reviewed and a decision made.

(3) *Graduate Credit for Courses Taken in the School of Law.* Upon the recommendation of the Director of Graduate Studies, and upon the approval of the Dean of the Graduate School, students in the social sciences may take certain courses in the School of Law for graduate credit. In some instances courses in the School of Law may be considered as fulfilling a student's requirements for a minor. To register for such courses, the student should present a letter from his Director of Graduate Studies to the Dean of the School of Law requesting permission to register for certain specified courses.

(4) *Reciprocal Agreement with the Consolidated University of North Carolina.* Under a plan of co-operation between the Consoli-

dated University of North Carolina and Duke University, students regularly enrolled in the Graduate Schools of the Consolidated University during the regular academic year, and paying full fees to that institution, may be admitted to a maximum of two courses per semester in the Graduate School of Duke University upon payment of a nominal registration fee of two dollars and of any other special fees regularly required of all students. Under the same arrangements, students in the Graduate School of Duke University may be admitted to course work at the Consolidated University of North Carolina. This arrangement is not in effect during Summer Sessions.

GRADES. Grades in the Graduate School are as follows: *E, G, S, F,* and *I*. *E* (exceptional) is the highest mark. *G* (good) and *S* (satisfactory) are the remaining passing marks. *F* (failing) is below passing, and *I* (incomplete) indicates that some portion of the student's work is lacking, for a satisfactory reason, at the time the grades are reported. The instructor who gives an *I* for a course specifies the date by which the student must have made up the deficiency. In no case may an extension be granted beyond one calendar year from the date the course ended. If the course is not completed, a statement of *No Credit* is made upon the student's record.

COURSES PRIMARILY FOR UNDERGRADUATES. Students granted provisional admission may on occasion be required as part of their program to take undergraduate courses as prerequisites to continued graduate study. Undergraduate courses thus taken and others elected by the student will carry no graduate credit.

In exceptional cases, 100-level courses *outside the major department* may be taken for graduate credit to a maximum of two one-semester courses or one year-course not exceeding a total of 8 units, when approved by the Directors of Graduate Studies in the major department and in the department in which the course is listed and the supervisor of the program.

NORMAL PROGRAMS. Normally graduate students who do not carry teaching or assisting duties carry a full load of graduate work until the requirements of the several degrees are met. A full load is 15 units a semester or 30 units for the academic year. Six units is a maximum load for one term of the Summer Session.

WITHDRAWAL AND INTERRUPTION OF PROGRAM

From a Course. After 14 days from the date of registration students may drop courses only with the approval of the Director of Graduate Studies, the instructor of the course to be dropped, and the Dean of the Graduate School. If the course is dropped without the necessary approval, the permanent record will list the course as *Dropped Unofficially, F.* If a course is dropped 30 days or more after

the beginning of the class for the semester involved, the status of the student at the time of withdrawal from the course will be determined and be indicated by the designation *Withdrew Passing* (W.P.) or *Withdrew Failing* (W.F.)

From the Graduate School. The University reserves the right, and matriculation by the student is a concession of this right, to ask the withdrawal of any student whose conduct at any time is not satisfactory to the University, even though no specific charge be made against the student. If a student wishes for any reason to withdraw from the Graduate School he should notify both the Director of Graduate Studies in his major department and the Dean of the Graduate School prior to the date of his expected withdrawal. (For refunds upon withdrawal, see below, p. 35.)

Students who find it necessary to interrupt their program of study for a period longer than a summer vacation should, before departure, leave with the Graduate Office a statement of the reason for interruption, mailing address, and expected date of return.

TRANSCRIPT. A student who wishes to transfer his credits from Duke University to another institution is entitled to one free transcript of his record. A fee of one dollar, payable in advance, is charged for each additional copy. Requests are directed to the Central Records Office.

SIZE OF CLASSES. Classes which carry graduate credit are limited in size to twenty-five students. In exceptional cases this regulation may be modified, but only by permission of the Executive Committee of the Graduate School Faculty on the recommendation of the department concerned. When courses numbered 200 to 299 carry graduate credit, they may include no more than three juniors and such juniors must, at the time of registration, have an over-all B average.

Language Requirements

Because a requirement for the A.M. degree is mastery of one acceptable foreign language, and for the Ph.D. is mastery of two, the prospective graduate student should attain mastery of at least one acceptable foreign language and preferably two before applying for admission. The facilities for graduate study are highly specialized and costly. The student who must lay them aside to acquire what he could have learned as an undergraduate is wasting his time.

ACCEPTABLE LANGUAGES. The languages normally required are French and German, but with the approval of the Dean of the Graduate School, a student may substitute for either of these another language which has a definite relation to the candidate's program of work for the degree.

MEETING THE REQUIREMENT. Language requirements may be met in three ways—by transcript, by a written examination taken upon first registration, by a reading examination.

1. BY TRANSCRIPT. A candidate for the A.M. degree may meet the language requirement by a transcript showing the completion, prior to earning the A.B. or B.S., of the third college year of one acceptable language or the second college year of each of two acceptable languages. A student who elects this procedure must, with the endorsement of the Director of Graduate Studies in his major department, write the Dean of the Graduate School for permission to do so.

   Under the conditions stated below, a candidate for the Ph.D. may, with the permission of the Dean of the Graduate School and of the chairman of the program committee, meet one of his language requirements by filing a transcript or certification showing that he has passed a comparable examination elsewhere. The conditions are that the examining graduate school have substantially the same language requirements as this Graduate School, that the examination have been passed while the student was pursuing a Ph.D. program in the same field as his declared major at Duke University or that the examination was required of all Ph.D. candidates regardless of field, and that the examination have been passed recently enough to indicate that the student retains command of the language.

2. BY WRITTEN EXAMINATION. On Monday of the fall registration period and on the day before spring registration, Reading, Vocabulary, and Grammar tests in French and German are offered (see the Calendar for hour and place). Any entering student engaging upon an A.M. or Ph.D. program who has not already taken these tests may take them. On the basis of his scores the student will (1) be certified as meeting requirements in these languages, (2) be advised to present himself for the regular reading examinations at the first opportunity, or (3) be advised to enroll in the special reading courses (see below).

3. BY READING EXAMINATION. At dates listed in the Calendar reading examinations in French, German, Spanish, and when requested Italian are offered. Reading examinations in other languages must be separately arranged.

   Students who require re-examination at scheduled times will be charged $5.00 for each re-examination; if special times are necessary, the fee will be $10.00.

SPECIAL READING COURSES. Special courses designed to assist graduate students in acquiring a reading knowledge of French

or German are offered for three hours a week, French during the fall semester, German during the spring semester and The Summer Session. A student who registers for either course must reduce his normal load of graduate courses by three units, with no reduction in fees. No auditors are permitted in these courses at any time. Undergraduates may not enroll during the academic year and may, with permission of the Dean of the Graduate School, in the Summer Session only if total registration permits.

REQUIREMENTS FOR FOREIGN STUDENTS. Foreign students whose native language is not English are, during their first registration period, required to take a test for minimum competence in English (see p. 17). Such students, with the approval of the Director of Graduate Studies in their major department, may request permission of the Dean of the Graduate School to substitute English for *one* of the required foreign languages. If permission is granted, a reading test in English, like those in French and German, will be arranged.

Degrees Offered

THE DEGREES OFFERED. The Graduate School of Arts and Sciences now offers the following degrees: Master of Arts (A.M.), Master of Science (M.S.), Master of Education (M.Ed.), Master of Arts in Teaching (M.A.T.), Doctor of Philosophy (Ph.D.), and the Doctor of Education (Ed.D.).

General Regulations Governing Master's Degrees

RESIDENCE REQUIREMENTS. Candidates for all Master's degrees must spend, as a *minimum,* one full academic year, or its equivalent in Summer Session terms, in residence at Duke University. Those who wish to complete their degrees wholly in the Summer Session must be in residence for five terms. Often more time will prove necessary in either case, depending upon the nature of the student's research problem if a thesis is offered and upon the student himself.

A Master's degree *without thesis* requires a *minimum* of 30 units of graduate credit in course and seminar work properly distributed between major and minor fields.

A Master's degree *with thesis* requires a *minimum* of 30 units of graduate credit; not less than 24 units must be in course or seminar work properly distributed between major and minor fields. If after completion of the 30-unit requirement the candidate remains in residence, he must register for a minimum of 3 units of residence per semester to be added to any course-seminar registration of 6 units or less, 2 with 7 units, 1 with 8 units, and none with 9 or more units.

A Master's candidate who presents a thesis when not registered in residence will be charged 3 units of residence for the semester or term in which the thesis is presented.

CANDIDACY FOR THE MASTER'S DEGREE. To be considered as a candidate for a Master's degree (A.M., M.S., M.Ed., M.A.T.), the graduate student must (1) have made passing grades in all courses taken during the first period of residence (if he registers for fewer than 12 units of graduate courses during his first period of residence, he must make passing grades on the initial 12 units of graduate courses), (2) have made a grade of *G* or *E* on at least 3 units of this work, and (3) have received the approval of the major department (or in the case of the M.A.T., of the supervisory committee).

TRANSFER OF GRADUATE CREDITS. (See above, p. 19.)

Under certain circumstances a maximum credit of 6 units may be allowed for graduate courses completed elsewhere. The acceptance of credit up to this amount, however, will not reduce the minimum period of full-time registered residence at Duke University.

With the approval of both the student's major department and the Dean of the Graduate School, a student who is granted such transfer credit may be permitted to register for as much as 12 units of thesis research instead of the usual 6 units. Or he may be permitted to fill out his schedule with as much as 6 units of further undergraduate training or 6 units of required language courses on the undergraduate level. In no case will credit be allowed for extension or correspondence courses.

TIME LIMITS FOR COMPLETION OF MASTER'S DEGREES. The candidate for the Master's degree who is in residence for consecutive academic years should complete all requirements for the degree within two calendar years from the date of his first registration in the Graduate School. Any candidate must complete all requirements within six calendar years of his first registration.

Credits earned over a long period of time cannot be credited toward a degree.

THE THESIS. The thesis should demonstrate the student's ability to collect, arrange, interpret, and report pertinent material on his special research problem. Although a publishable document is not required, the thesis must be written in an acceptable style and should exhibit the student's competence in scholarly methods and procedures. Requirements of form are set forth in the *Manual of Style for Theses and Dissertations.*

The Master of Arts Degree

PREREQUISITES. As prerequisites to graduate study in his major subject, the student must have completed a *minimum* of 12 semester hours of approved college courses in that subject, and 12 additional semester hours in that subject or in related work. Since some departments require more than 12 semester hours, the student should read carefully the special requirements listed by his major department, which are included as headnotes to the course offerings in the *Bulletin.*

LANGUAGE REQUIREMENTS. The candidate for the A.M. degree must have a reading knowledge of at least one foreign language. (The several departments reserve the right to specify which foreign languages are acceptable.) For methods of satisfying language requirements see p. 22. The language requirements must be satisfied before the Master's examination is taken.

MAJOR AND MINOR SUBJECT. In his graduate work the stu-

dent must present acceptable grades for a minimum of 24 units of graduate courses. Of these, at least 12 units must be in the major subject. The student must take a minimum of 6 units in a minor subject which is approved by his major department. The remaining 6 units of the required 24 may be taken in either the major or minor department, or in another approved by the major department and by the Dean of the Graduate School. In addition he must present a thesis, which carries a credit of 6 units for which he must register. Thus, his earned credit for the degree totals a minimum of 30 units.

FILING THE THESIS TITLE. At least one month before presenting the thesis or not later than March 1 (March 2 if March 1 falls on Sunday) of the academic year in which the degree is expected to be conferred, the student must file with the Dean of the Graduate School, on the official form, the title of the thesis and declaration of intention to graduate. The title must have the approval of the Director of Graduate Studies in the major department, and of the instructor under whose direction the thesis will be written. During the Summer Session title and declaration must be filed at least one month prior to first presentation of the thesis.

PREPARING THE THESIS. All basic requirements for preparing the thesis are described in the *Manual of Style for Theses and Dissertations* obtained at the Duke University Book Store, West Campus. The thesis must be typed on the following grade of paper: the original must be green-lined paper of at least sixteen-pound weight, the three copies must be on paper of at least thirteen-pound weight. Both grades of paper must be of seventy-five percent rag content. Thesis binding and other particulars are prescribed in the *Manual.*

SUBMITTING THE THESIS. Four bound, typewritten copies of the thesis must be submitted in approved form to the Dean of the Graduate School on or before May 1 (May 2 if May 1 falls on Sunday) preceding the June commencement at which the degree will be conferred. The copies will then be distributed to the several members of the examining committee. The thesis must be submitted to the Graduate Office from three to five days before the scheduled date of the student's examination. Students should plan to allow at least four days for the process of binding the thesis at Seeman Printery.

THE EXAMINING COMMITTEE AND THE EXAMINATION. The instructor who directs the thesis appoints an examining committee composed of the director of the thesis and two other members of the Graduate Faculty, one of whom must be from a department other than that of the major. This committee is submitted for approval to the Dean of the Graduate School when the thesis is first presented.

The candidate appears before this committee for an examination

which lasts for about one and one-half hours. The subject matter covered in the examination is usually restricted to the thesis and to the major field.

If the candidate passes his examination, the examining committee certifies this fact by signing the title page of the thesis. The candidate then returns the original and one carbon copy of the thesis to the Dean of the Graduate School, who deposits them in the University Library.

The Master of Science Degree

PREREQUISITES. The degree of Master of Science is offered in the fields of Civil, Electrical, and Mechanical Engineering. As prerequisites to this degree the student must have earned a Bachelor's degree from an accredited engineering college and have completed a minimum of 12 semester hours work in the major field.

FOREIGN LANGUAGE. There is no foreign language requirement for this degree.

MAJOR AND MINOR SUBJECTS. The work for the Master of Science degree is designed to provide a broad foundation in the science of civil, electrical, and mechanical engineering. The student must present acceptable grades for a minimum of 24 units of graduate courses. Of these, at least 12 units must be in the major subject. He must also take a minimum of 12 units of minor work in the Departments of Mathematics and either Physics or Chemistry. In addition to these he must present a thesis, which carries a credit of 6 units. Thus his earned credit for the degree totals a minimum of 30 units.

REGULATIONS AND PROCEDURES. The regulations and procedures and the provisions for examination and an examining committee are the same as those for the Master of Arts degree.

The Master of Education Degree

PREREQUISITES. Before a student is admitted to graduate study for this degree, he should have completed, on the undergraduate level, a minimum of 18 semester hours of approved work in Education.

Before the degree is conferred the student must have had one year of actual teaching experience, or have met certification requirements by supervised student teaching in an accredited school. Such supervised student teaching may be at either the undergraduate or the graduate level.

REQUIREMENTS FOR THE DEGREE. The Master of Education degree may be earned either with or without the presentation of a thesis.

Without thesis: The required work includes a departmental major (Elementary Education, School Administration and Supervision, or Secondary Education) of at least 12 units, and a minor of at least 6 units outside the Department of Education. The remaining 12 units are elective within the area of Education and the minor field, but require the approval of the student's major adviser and the Director of Graduate Studies.

Toward the end of his residence the student must pass a comprehensive examination on his departmental major. This examination shall be prepared and conducted by the instructors of the student's major as designated by the Director of Graduate Studies of the Department of Education. Request to take this examination should be made to the Director of Graduate Studies at least two weeks before the date on which the examination is to be conducted.

With thesis: Students who elect this plan are permitted to substitute a thesis for 6 units of the required course work. The thesis subject must be approved by the instructor who is to direct it, and by the Director of Graduate Studies.

In addition to the thesis, the student must present at least 24 units of course credit. Of these, 12 units must be taken in the student's departmental major. Six units, constituting a minor, must be taken outside of the Department of Education. The remaining 6 units are elective within the area of Education and the minor field, but require the approval of the student's major adviser and the Director of Graduate Studies.

The regulations governing the thesis are the same as those for the Master of Arts degree. (see p. 26).

The Master of Arts in Teaching Degree

PREREQUISITES. The degree of Master of Arts in Teaching is designed for teachers already in service and for recent graduates of liberal arts colleges who wish to enter public school teaching.

A student should normally have completed a minimum of 12 semester hours in his proposed major subject and an additional 12 semester hours in that or related subjects. Should a student wish to undertake a graduate major different from his undergraduate major, the prerequisites may be modified upon the recommendation of the student's committee and the approval of the Dean of the Graduate School.

PROGRAMS FOR THE DEGREE. Either of two programs may be arranged, in consultation with the student's committee:

A. A major in Education of 18 to 24 units and 6 to 12 units in non-education courses.

B. A major in non-education courses of 18 to 24 units and 6 to 12 units in Education.

In both programs a minimum of 30 units is required.

The non-education courses are to be taken in one or more subjects ordinarily taught in the secondary schools. The amount and distribution of this work will be determined by the needs of the individual student. A major in Biological Sciences or in Physical Sciences is possible in this program.

The Master of Arts in Teaching may be earned with or without the presentation of a thesis. If a student, in consultation with his committee, elects to present a thesis, 6 units of the total of 30 units required will be allotted to thesis research. He will then be required to complete 24 units of course credits. The regulations governing the thesis, are the same as those for the A.M. (see p. 26). Candidates for the Master of Arts in Teaching who have not had teaching experience are required to take Education 215-216 in which case a minimum of 36 units is required.

THE COMMITTEE. Each candidate for the degree will be assigned a committee, appointed by the Director of Graduate Studies in the major department or area. This committee will consist of three members, at least one of whom will be from the Department of Education, and at least one from another department. The chairman of the committee will normally be chosen from the department of the major.

The Doctor of Philosophy Degree

The Ph.D. degree is essentially a research degree. Although course work is a necessary part of the student's program, the mere accumulation of course credits will not be sufficient for attaining this degree. The granting of the Ph.D. is based primarily upon the student's knowledge of a specialized field of study and upon the production of an acceptable dissertation embodying the results of original research.

REQUIREMENTS FOR THE PH.D. DEGREE. The formal requirements, discussed in detail below, for the Ph.D. degree are as follows: (1) foreign languages; (2) major and minor courses; (3) supervisory committee for program of study; (4) residence; (5) preliminary examination; (6) dissertation; (7) final examination. In order to be considered for candidacy for the Ph.D. degree, the student must have passed all of his course work in the first year of graduate study; on at least 9 units of course work he must have made a grade of *G* or better.

FOREIGN LANGUAGES. Normally, a reading knowledge of both French and German is required. (For methods of meeting this requirement, see p. 22.)

A student working toward the doctoral degree should complete the language requirements for that degree by the end of his first year of residence. If he fails to meet these requirements by the end of his third semester of residence, he must register in the appropriate special reading course or courses (see page 22) until he has satisfied the requirements.

MAJOR AND MINOR. The student's program of study necessarily demands substantial concentration on courses in his major department. Enough work must be taken in another department to constitute an acceptable minor. Exceptions which permit both the major and minor within the same department are allowed only by the special permission of the Dean of the Graduate School.

COMMITTEE TO SUPERVISE THE PROGRAM OF STUDY. The program of study should normally be submitted during the third semester of graduate work for students who entered with a Bachelor's degree and during the second semester's residence for students entering with a Master's degree or equivalent. The five members of the supervisory committee are appointed by the Dean of the Graduate School upon the recommendation of the Director of Graduate Studies of the major department. This committee, with the instructor who is to direct the student's research serving as chairman, formulates the program of study, which is submitted to the Dean of the Graduate School for his approval. Of the five members, one must be from a department (usually the minor) other than the major department. This committee, with occasional necessary changes, serves also as the examining committee for both the preliminary and the final Ph.D. examinations.

RESIDENCE. For students first registering in September 1959 or thereafter the *minimum residence* requirement is 60 units of graduate credit not more than 30 units of which may be accepted by transfer. Since a full program is 30 units per academic year, the prospective Ph.D. candidate who enters with the A.B. or B.S. degree must plan to spend in residence a *minimum* of two academic years; if he enters with the A.M., his *mimimum* residence is one academic year. If there are undergraduate deficiencies in his program, he may in addition to the minimum requirements be required to take preliminary undergraduate courses for which he will not receive graduate credit. Even if there are no such undergraduate deficiencies, the student's supervisory committee will determine what residence requirements if any above the minimum the student must meet.

Resident doctoral degree students normally register for 15 units per semester, unless they are subject to load limitations dictated by appointment restrictions or by employment. The *normal registration*

will carry through that semester in which the preliminary examination has been passed.

A student who remains in residence after passing the preliminary examination must register for a minimum of 3 units of residence per semester to be added to any course-seminar registration of 6 units or less, 2 with 7 units, 1 with 8 units, and none with 9 or more units.

Candidates not in residence register and pay fees for one unit each semester *in absentia* if they are to remain candidates.

Any courses, language certifications, or other credits for advanced standing which are more than six calendar years old at the beginning of the semester in which preliminary examinations are passed will not be accepted toward fulfilling the minimum requirements of the doctoral degree.

CREDIT FOR SUMMER WORK. Credit earned in the Summer Session will not reduce the minimum required residence of one academic year.

PRELIMINARY EXAMINATION. A student is not accepted as a candidate for the Ph.D. degree until he has passed the preliminary examination. A transfer student who may have passed a preliminary examination elsewhere must nevertheless take the examination in this Graduate School. The examination ordinarily covers both the major and minor fields.

Normally the student should pass this examination by the end of his second year of resident graduate work. If he has not passed it by the middle of his third year, he must file with the Dean of the Graduate School a statement explaining the delay and setting a date for the examination. Except under unusual circumstances, extension will not be granted beyond the end of the third year.

PRIVILEGE OF RE-EXAMINATION. Should the student fail the preliminary examination, he may apply, with the consent of his supervisory committee and of the Dean of the Graduate School, for the privilege of a second examination to be taken no sooner than six months after the date of the first. Failure on the second examination will render the student ineligible to continue his program for the Ph.D. degree at Duke University.

THE DISSERTATION. The dissertation is expected to be a mature and competent piece of writing, embodying the results of significant and original research.

TIME LIMITS. The expectation is that the doctoral dissertation will be submitted and accepted within two calendar years after the preliminary examination is passed. Should the dissertation not be submitted and accepted within four calendar years after the examination, the candidate, with the approval of his committee, may petition the Dean of the Graduate School for an extension of one year.

If the dissertation should not be submitted and accepted within five years after the examination, to remain a candidate for the degree the student must pass a second preliminary examination. In such a case, the time limit for submitting the dissertation will be determined by the Dean of the Graduate School and the candidate's committee.

For the student registered for the first time in September 1959 these limits are fully effective. For the student who registered before September 1959 the time limits are effective as though he first registered at that time.

Filing Title. On or before March 1 (March 2 if March 1 falls on Sunday) preceding the June commencement at which the degree is expected to be conferred, the student must file with the Dean of the Graduate School, on the official form to be obtained from the Graduate Office, the title of the dissertation. This title must receive the written approval of both the Director of Graduate Studies of the student's major department and the professor who directs the dissertation.

Form. The basic requirements for preparing the dissertation are described in the instructions for microfilming (see below) and in the *Manual of Style for Theses and Dissertations* to be obtained from the Duke University Book Store, West Campus. The dissertation must be typed on the following grades of paper: the original must be on green-lined paper of at least sixteen-pound weight; the three copies must be on paper of at least thirteen-pound weight. Both grades of paper must be of seventy-five percent rag content.

Submitting Dissertation. The dissertation must be completed to the satisfaction of the instructor who directs it. Four typewritten copies, the original unbound and three copies bound, must be deposited with the Dean of the Graduate School on or before *April 15* preceding the June commencement when the degree is to be conferred. The dissertation must be submitted to the Graduate Office from seven to ten days before the scheduled date of the student's examination.

PUBLICATION ON MICROFILM. All doctoral dissertations will normally be published on microfilm through University Microfilms, Ann Arbor, Michigan. Authors may, if they wish, also copyright them. The abstract will be published in *Dissertation Abstracts. Before final typing is completed, the candidate should obtain in the Graduate Office detailed instructions on the procedure* together with a microfilming agreement which is signed and returned when the dissertation is finally deposited in the Graduate Office.

In brief, the original copy of the dissertation, in clean type, will remain unbound except for a spring binder. When the carbon copies are bound, a cover, unattached, is prepared for the original copy. Ten copies of an *abstract,* carefully written and not more than 600 words

long, are submitted when the dissertation is first presented to the Graduate Office. A non-returnable dissertation fee of $25 is charged for handling and microfilming. If copyright is desired, an additional fee is charged of $6 plus 2½ cents per page.

FINAL EXAMINATION. The final oral examination shall be primarily on the dissertation. Questions may, however, be asked in the candidate's major field.

If a student fails his final examination, he may be allowed to take it for a second time, but not sooner than six months from the date of his first. Permission to take the second examination must be obtained from the instructor who directed the dissertation and from the Dean of the Graduate School. Failure to pass the second examination renders the student ineligible to continue work for the Ph.D. degree at Duke University.

The Doctor of Education Degree

The Doctor of Education is a professional degree planned for those who are, or intend to become, school administrators, supervisors, directors of instruction, curriculum consultants, or college teachers of education.

ADMISSION. The candidate for the Ed.D. degree must meet the same requirements for admission to the Graduate School as the candidate for the Ph.D. degree. In addition to these uniform requirements, the candidate for the Ed.D. (1) must have had at least two years' experience in educational work; (2) must present strong letters of appraisal and recommendation from persons well qualified to speak with authority of his abilities; and (3) must present himself, if possible, for a personal interview. The Standing Committee on the Ed.D. degree reserves the right to insist upon an interview.

RESIDENCE, ETC. Regulations concerning residence requirements, grades required during the first year of graduate study, and the preliminary examination are the same as those for the Ph.D. (See pp. 29-31).

FOREIGN LANGUAGES. There are no foreign language requirements for the Ed.D. degree.

PROGRAM OF WORK. The candidate for the Ed.D. degree will choose as his major field either Educational Administration and Supervision or Curriculum and Instruction.

Candidates in Administration and Supervision will take approximately 24 units in that field, including the seminar in School Administration. In addition, they will take approximately 24 units in other professional courses and a minor of at least 24 units approved by the candidate's supervisory committee and the Standing Committee on the Ed.D. degree.

Candidates in Curriculum and Instruction will take approximately 24 units in Curriculum and Instruction. In addition, they will take from 12 to 24 units in other professional courses, and a minor of from 24 to 36 units in the humanities, the natural sciences, or the social sciences, exclusive of professional education.*

The program of work for each candidate must be approved by the Standing Committee for the Ed.D. degree.

DISSERTATION. The candidate must write a dissertation, for which the formalities of presentation, including its defense in a final examination, are the same as those for the Ph.D. degree. The type of dissertation will depend upon which of the following plans the candidate adopts:

Plan A. A candidate choosing Plan A will write a dissertation which is expected to be a mature and competent piece of writing, embodying the results of significant and original research. It must be, in essence, a contribution to knowledge.

Plan B. A candidate choosing Plan B will serve at least a year in an administrative post, or a teaching position in an elementary or secondary school, subsequent to the completion of the second year of residence. His dissertation may be concerned with a problem, or several closely related problems, growing out of this experience. Although the dissertation written under Plan B is of a practical nature, it must demonstrate the candidate's ability to investigate and report on a significant phase of education in his major field.

PUBLICATION ON MICROFILM. The dissertation will be published on microfilm, as is the dissertation for the Ph.D. (See p. 32.)

FINAL EXAMINATION. Regulations for the final examination are identical with those for the Ph.D. degree. (See p. 33.)

*Revision of unit requirements is now being considered. Please consult the Department for current status.

Awards and Fees

Fellowships, Scholarships, and Assistantships

FOR the encouragement and financial assistance of graduate students of marked ability, Duke University has established a considerable number of fellowships, scholarships, and assistantships. The stipends for these range from $500 to $3,000. Holders of grants pay tuition and other fees regularly required of all graduate students.

Fellows and scholars pay full tuition and fees and are registered for a full schedule of course work and receive full residence credit. In general, assistants pay 12 units tuition and fees, are registered for 12 units, and receive 12 units residence credit.

APPLICATION FOR GRANTS. Applications for these grants, along with all supporting documents, must be submitted on or before February 15. Notification of awards is made about April 1. Late applications will be considered, should any vacancies occur in the list of appointees. No appointment is made for longer than one academic year.

Further information and application forms may be obtained from the Dean of the Graduate School, Duke University.

Grants offered for 1960-61 are:

FELLOWSHIPS: Approximately thirty-five James B. Duke Fellowships with stipends of $3000; one Angier Duke Memorial Fellowship of $2,300; one Ottis Green Foundation Fellowship in Humanities or Social Sciences of $1600; four Gurney Harriss Kearns Fellowships in Religion ranging from $1,600 to $2,000; University Fellowships ranging from $1,000 to $2400.

GRADUATE SCHOLARSHIPS. Graduate Scholarships of $975 to $2000 for first-year graduate students who plan to enter the basic fields of Arts, Sciences, and Social Studies; University Scholarships ranging from $500 to $1750.

GRADUATE ASSISTANTSHIPS. Appointments as Departmental Assistants and readers carry a total stipend in the range of $1000 to $2450. The value of the stipend is determined by the fraction of time given to assisting, the qualifications of the assistant, and the nature of work assigned.

RESEARCH ASSISTANTSHIPS. Appointment for predoctoral candidates whose special training and qualifications enable them to

serve as assistants to individual staff members in certain departments. Stipends range from $400 to $3000 based on the assisting time required.

Appointments to qualified, advanced students as Research Associates, Research Fellows, and Research Scholars. Stipends range upward from about $1,500.

COKESBURY GRADUATE AWARDS IN COLLEGE TEACHING. These awards, sponsored by the Board of Education of the Methodist Church, are designed to assist graduate students who are committed to a Christian philosophy of higher education and who intend to teach in college. The applicant must have been a member of the Methodist Church for at least three years, and must have been accepted for or be currently pursuing a program of graduate studies at one of the Methodist-related universities, including Duke University, approved for this program. Awards, for one year, vary in amount from $500 to $2500.

Applications must be completed before March 1. For further information and application forms, apply to the Dean of the Graduate School.

CHARLES W. HARGITT RESEARCH FELLOWSHIP IN ZOOLOGY. The Charles W. Hargitt Research Fellowship in Zoology is devoted to the promotion of research in the field of cellular studies. It may be awarded to post-doctoral candidates or established investigators who desire to engage in full-time research, and to predoctoral candidates in support of their graduate training. Awards at the post-doctoral level will vary, depending on previous training and experience, but in general will be equivalent to that of a first-year instructor and may be higher in the case of established investigators. Awards at the predoctoral level will range from $2,000 to $3,000. The recipient will be expected to engage in full-time research or training and will have no departmental duties. Research facilities will be provided. Appointment is for one year with the possibility of reappointment.

Inquiries and applications should be addressed to Dr. H. S. Roberts, Department of Zoology.

LILLY ENDOWMENT FELLOWSHIPS IN POLITICAL SCIENCE. These fellowships are available to qualified students who seek a Ph.D. in political science and who have an interest in exploring some aspect of the relationship between Christianity and the social order. Lilly Endowment Fellows will take their minor work in the Graduate Department of Religion and will ordinarily write their dissertations in the field of political theory. The stipend is $2,600. Appointment is for one year with the possibility of reappointment. Inquiries and applications should be made to Professor John H. Hallowell, Department of Political Science, Duke University.

FELLOWSHIPS AND GRADUATE SCHOLARSHIPS IN FORESTRY. Information regarding special fellowships and graduate scholarships in forestry may be obtained from the Dean of the School of Forestry, Duke University, Durham, North Carolina.

FEDERAL FELLOWSHIP PROGRAMS. Duke University has been approved to offer programs sustained by National Defense Act Graduate Fellowships in Anatomy-Psychology, English and American Literature, History, and Political Science. In addition, the University is approved to recommend a certain number of applicants for Cooperative Graduate Fellowships and Summer Fellowships for Graduate Teaching Assistants offered by the National Science Foundation.

PART-TIME INSTRUCTORS. A number of departments offering graduate work make use of exceptionally qualified graduate students as part-time instructors. These students are usually able to register for a graduate program of 9 units. Inquiries concerning such appointments should be directed to the Chairman of the Department concerned.

PAYMENTS TO HOLDERS OF GRANTS. Payments of stipends to all graduate students holding fellowships, scholarships, and graduate assistantships for the academic year are made by the Treasurer of the University in eight monthly installments payable on the 20th of each month beginning October 20th. Arrangements may be made to prorate tuition charges on the same basis.

LOANS. The University has been allotted a sum for use under the provisions of the National Defense Act Loan fund. In addition, University funds are available to grant low-interest loans to deserving students of good academic standing. Application should be made to Mr. Robert L. Thompson, 217 Allen Building, Duke University.

Financial Regulations

The Graduate School awards such financial aid as fellowships, scholarships, and assistantships. The several departments engage part-time instructors who may be graduate students. The Treasurer of the University, however, has sole responsibility for paying stipends to students, collecting from them such fees as are due, and making special arrangements for prorating fees.

GENERAL FEES IN THE ACADEMIC YEAR. The following table shows the general fees and charges collected from all students. All fees for each semester are due and payable, unless otherwise specified, at the time of registration for that semester. No student is admitted to classes until arrangements have been made with the Treasurer of the University for the settlement of fees.

Tuition and general fees* ($32.50 per unit) $487.50
Athletic Fee, not including federal tax, optional, per year, payable in the fall semester 10.00
Room rent (see detailed statement p. 39.)
Fee for Microfilming, payable by candidates for a doctoral degree when the dissertation is presented to the Graduate Office after the final examination 25.00

* General fees, in lieu of most special charges, include the following fees: Matriculation, Medical, Library, Damage, Commencement, Diploma, and an average of the Laboratory and Materials Fees.

Tuition and fees for a full semester program of 15 units amount to $487.50. For a part program, tuition and fees are computed at the rate of $32.50 per unit.

SPECIAL FEES FOR TEACHERS AND OTHERS. The Graduate School recognizes a special obligation to encourage the following types of students in their professional and personal advancement: (1) members of the faculties of the neighboring public schools and colleges, currently engaged in full-time teaching while taking courses in the Graduate School, (2) ministers of neighboring churches, (3) wives of Duke faculty members, (4) full-time employees of Duke University who are paid on a monthly basis throughout the year. The reduced fees do not apply to teachers and ministers while on leave of absence, nor to holders of fellowships, scholarships, or assistantships, nor to part-time instructors.

Persons eligible for the reduced fee must meet the admission standards required of all graduate students and must be admitted to the Graduate School. They may enroll for one or two courses per semester (in no case totaling more than 7 units) upon the payment of a fee of $5.00 for registration for each semester and a tuition fee of $12.50 per unit of credit. Such students are not covered by Student Health provisions.

WITHDRAWAL FROM A COURSE OR FROM THE GRADUATE SCHOOL. Arrangements made with the Treasurer to prorate tuition and fees due do not imply that the full amount is not due and payable. A student who after 14 days after the date of registration withdraws from a course or from the Graduate School is liable for payment of full tuition fees and room rent.

STIPENDS AND INCOME TAX. Ordinarily stipends awarded under fellowships and scholarships are not subject to income tax. However, a portion of the award to graduate assistants may be subject to tax. The Graduate Office will supply detailed information.

Living Accommodations

The Men's Graduate Center is available to men of the graduate and professional schools. The rooms are equipped for two persons and the rental charge for a double room is $400.00 for the academic

year or $200.00 for each occupant, or $100.00 per semester for each occupant.

Epworth Hall on the Woman's College Campus is available to women of the graduate and professional schools. The rental charge for a single room is $275.00 for the academic year or $137.50 each semester. The rental charge for a double room is $450.00 for the academic year or $225.00 for each occupant, or $112.50 per semester for each occupant.

The University does not operate housing facilities for married students. Married students should arrange for rooms or apartments in the city. In order to aid married students, the Housing Bureau maintains a file on rooms and apartments listed for rental to Duke students.

Applications for rooms are to be made to the Housing Bureau, Duke University, Durham, N. C. The rooms are rented for a period of not less than one semester or, in the case of a medical student, one term. No refund of room rent will be made except for involuntary withdrawal to enter the armed services. Such refunds will be made in accordance with the University's established schedule.

Regulations governing the occupancy of rooms will be supplied directly from the Housing Bureau when the reservations are made. Occupants are expected to abide by these regulations.

DINING SERVICE. Food service on both the Woman's College Campus and the West Campus is cafeteria style. The cost of meals approximates $1.75 to $2.25 per day, depending upon the need and taste of the individual. The dining facilities on the West Campus include three cafeterias with multiple-choice menus, a grill, and, in addition, the Oak Room where full meals and a la carte items are served. The Men's Graduate Center has a cafeteria open at meal hours, and a coffee lounge which is open until 11:00 P.M. The prices are the same as in the West Campus Union. Because of the large number of those served in the dining halls, it is not possible to arrange special diets for individual students.

MEDICAL CARE. The complete medical facilities of the Duke University Medical Center are available to all members of the University community. To secure the benefits of the Student Health program, a graduate student during the term or semester in which the illness occurs must 1) in the Summer Session term be registered for at least 3 units, 2) prior to completing minimum residence requirements be registered for at least 9 units per semester and thereafter according to the schedule on pp. 24 and 31. Students are not covered during vacations and their dependents and members of their family are not covered at any time. Care is provided for men at the Student

Health Office in Duke Hospital and for women at the Woman's College Infirmary.

The service provided includes hospitalization in Duke Hospital, when recommended by the Hospital staff, to a limit of thirty days; medical and surgical care under the supervision of a senior physician or surgeon; drugs, X-ray work, and ward nursing. Students pay for board while in the hospital. Excluded from the service are refraction of eyes, treatment of teeth, and of all chronic and pre-existing conditions, and elective surgery.

Graduate students are urged to carry adequate health insurance to supplement Student Health Program services. If students have insurance providing hospitalization, surgical, or medical benefits, the benefit shall be applied to the cost of their medical care.

Only those students whose course-load entitles them to full coverage under the Student Health program are eligible for a supplementary insurance policy which then comprises protection for the entire calendar year. Concerning this supplementary policy inquire of the Dean of the Graduate School.

MOTOR VEHICLES. Every motor vehicle operated on the campus by students enrolled in Duke University must be registered at 07 Allen Building within five days after arrival and thereafter must display the proper decal emblem. To register a vehicle, the student should present the following documents: (1) state vehicle registration, (2) state operator's license, (3) evidence of automobile liability insurance as required by North Carolina law ($5,000 per person, $10,000 per accident for personal injuries; $5,000 for property damage).

STUDENT ACTIVITIES. Graduate students new to Duke University may be reminded that they are welcomed to use such recreation facilities as swimming pools, tennis courts, golf course, and to affiliate with choral, drama, and religious groups. They may become junior members of the American Association of University Professors and may affiliate with Phi Beta Kappa and social fraternities.

BUREAU OF TESTING AND GUIDANCE. The University maintains a Bureau of Testing and Guidance which provides a centralized program of educational, vocational, and personal counseling for students. In addition, the Bureau administers special group testing programs for University schools and departments and serves as the local testing center for a wide variety of national testing programs. The Bureau also carries on programs of research in the field of measurement and counseling.

APPOINTMENTS OFFICE. Duke University maintains an active Appointments Office which has steadily been placing students in teaching and industrial positions. The services of this office are available without charge to graduate students. Those who are interested in

securing employment through the Appointments Office, or those who wish to have available for their own use in securing employment a complete file containing their academic record and pertinent recommendations, should register in this office.

ESTIMATED EXPENSES IN THE ACADEMIC YEAR. The necessary expenses of a graduate student are moderate. The University dormitories and Unions provide comfortable and wholesome living conditions at a minimum cost. Incidental expenses for recreation, traveling, clothes, and other items naturally depend on the tastes and habits of the individual. The table below lists the necessary *college* expenses for one academic year for a full program of work:

	Low	*Moderate*	*Liberal*
Tuition and fees	$ 975.00	$ 975.00	$ 975.00
Room Rent	200.00	200.00	250.00
Board	450.00	500.00	525.00
Laundry	30.00	40.00	50.00
Books	30.00	40.00	50.00
	$1685.00	$1755.00	$1850.00

Facilities for Graduate Study

The Libraries

THE University Libraries contained 1,390,540 volumes on July 1, 1959. In addition to the collections in the General Library, there are eight school and departmental libraries: Divinity, 88,649 volumes; Engineering, 27,423 volumes; Law, 116,391 volumes; Medical, 67,222 volumes; Woman's College, 121,220 volumes; Biology-Forestry, 67,462 volumes; Chemistry, 18,243 volumes; Mathematics-Physics, 21,872 volumes. In 1957-58, 48,488 volumes were added; 5,114 periodicals and 99 newspapers are received currently.

The General Library building, which was doubled in size in 1949, incorporates many modern arrangements for the preservation of the collections and for the convenience of the research scholar. Book stacks, storage areas, and quarters for rare books and manuscripts are air-conditioned. In the stacks, 274 carrels are available to graduate students as places of study, and a large reading room on the first floor of the building is reserved for graduate students. Upon application, graduate students may receive permit cards entitling them to use of the stacks.

A division of photographic services, with the most modern cameras and other equipment for microfilming or other photographic reproduction of printed and manuscript materials, provides a battery of reading machines to serve the Library's large collection of microfilms of rare books, periodicals, and newspapers.

The extensive resources of the Library for research students may be suggested by the following special collections:

THE TRENT COLLECTION OF WALT WHITMAN, containing the first and all other important early editions or issues of *Leaves of Grass;* books and articles of Whitman biography and criticism; nearly 300 manuscripts and 400 letters; and pictures, sheet music, and other miscellanea.

THE GEORGE WASHINGTON FLOWERS COLLECTION of books, manuscripts, pamphlets, and newspapers on all phases of Southern history.

THE ARENTS COLLECTION of several hundred volumes relating to the culture and production of tobacco and the manufacture and distribution of tobacco products.

THE JAMES A. THOMAS COLLECTION of books on Chinese history and culture.

THE GUIDO MAZZONI LIBRARY, a collection of approximately 23,000 volumes and 67,000 pamphlets covering the whole range of Italian literature, with special strength in the nineteenth century.

THE GUSTAVE LANSON LIBRARY of 12,000 books and monographs on French literature.

LATIN-AMERICAN COLLECTIONS, built around a special Peruvian library of 7,000 books and manuscripts, a Brazilian library of several thousand volumes, and an Ecuadorian library of 2,000 volumes, supplemented by strong collections of the public documents of these and other Latin-American countries.

THE ROBERTSON LIBRARY of Philippiniana.

THE FRANK C. BROWN FOLKLORE COLLECTION, consisting of about 38,000 manuscript pieces, 1,400 vocal recordings, and 650 musical scores of North Carolina folklore.

THE STRISOWER LIBRARY of International Law, numbering about 5,000 volumes, with many rare books and periodical files.

THE TRENT COLLECTION IN THE HISTORY OF MEDICINE (Hospital Library), containing about 3,000 books and 2,500 manuscripts, with special strength in anesthesia, anatomy, English medicine, vaccination, yellow fever, pharmacy, and medical biography.

THE HOLL CHURCH HISTORY LIBRARY, dealing primarily with the period of the Reformation.

COLLECTIONS IN ENGLISH AND AMERICAN LITERATURE, where emphasis has been placed principally on the eighteenth and nineteenth centuries, with collections of Swinburne, Tennyson, Rossetti, and Bryant, significant groups of annotated copies and first editions of Coleridge and Byron, the Carroll Wilson collection of Emerson, some 5,000 items of eighteenth-century English poetry and prose, and the Paul Hamilton Hayne library of American literature.

In addition to these and other special collections, the Libraries contain excellent files of United States federal and state documents, public documents of many European and Latin-American countries, and publications of European academies and learned societies. The newspaper collection, with 13,250 volumes and 11,049 reels of microfilms, has several long eighteenth-century files, strong holdings of nineteenth-century New England papers, and of ante-Bellum and Civil War papers from North Carolina, South Carolina, and Virginia; there are also many European and Latin-American papers. The manuscript collection of 2,722,087 items is particularly strong in all phases of the history, politics, and social and economic life of the South Atlantic region, though it includes also significant papers in

English and American literature, and several notable medieval manuscripts in both Greek and Latin.

HISPANIC STUDIES PROGRAM. The Graduate School offers an inter-departmental program of Hispanic studies leading to the A.M. and Ph.D. degrees. Students may write their theses and take their degrees in history, economics, political science, sociology, and Hispanic languages and literatures. The purpose of the program is to make possible desirable combinations of courses on the Hispanic world in these related disciplines and to bring to bear more strength of the faculty upon the training of a single candidate. This may be achieved through a judicious use of minors or by such special arrangements as may from time to time become necessary.

The Duke University Library holdings have been built up to facilitate graduate work and research in Hispanic-American cultural history, inter-American relations, economic history, politics, and Spanish-American literature. These collections are being constantly enlarged.

Science Laboratories

BOTANICAL AND ZOOLOGICAL LABORATORIES. Facilities for graduate study in the Departments of Botany and Zoology are located on both the East and the West Campuses. In addition to well-equipped laboratories for teaching and research in the various fields of botany and zoology, special facilities are available, such as animal rooms, greenhouses, darkrooms, refrigerated and air-conditioned rooms, radiation and radioisotope equipment, and other modern research facilities.

The Botany Herbarium, containing over 200,000 specimens, is particularly strong in material from the Southeast and includes notable collections of mosses, ferns, lichens and grasses. The Biology-Forestry Library contains an outstanding collection of books and periodicals. The Library currently subscribes to over 550 journals and has 67,400 volumes. Unique assets for teaching and research are the Sarah P. Duke Gardens, conveniently located on the West Campus; the Duke Forest, comprising 7,200 acres of woodland adjacent to the West Campus; and the Duke University Marine Laboratory at Beaufort, North Carolina.

Scholarships for advanced study during the summer months are maintained at the Highlands Laboratory, Highlands, North Carolina, at the Marine Biological Laboratory, Woods Hole, Massachusetts, and at the Duke University Marine Laboratory. Requests for information concerning the scholarships at the Highlands Laboratory should be addressed to the Botany Department, those concerning scholarships

at the Duke Marine Laboratory and at Woods Hole to the Zoology Department.

MARINE LABORATORY. Located at Beaufort, N. C., the Duke University Marine Laboratory was founded in 1938 as a result of the efforts of the late Professor A. S. Pearse. The excellent facilities, including four research buildings, classrooms, running sea water, motor vessels, living quarters and food service, provide excellent facilities for graduate courses in botany and zoology every summer, and for research activities throughout the year. Ten National Science Foundation predoctoral awards and four post-doctoral awards will be offered in 1960 for course or research work at the Marine Laboratory.

For information concerning these awards or for information about courses and research space at the Duke Marine Laboratory, write to the Director, Dr. C. G. Bookhout, Department of Zoology, Duke University, Durham, N. C.

PHYSICAL LABORATORIES. The Physics Building, comprising about 77,000 square feet of floor space, is devoted to the research and instruction of the Departments of Physics and Mathematics.

In addition to the lecture halls and the elementary laboratories, the building includes special laboratories for work in electrical measurements, electronics, microwaves, optical spectroscopy, atomic, nuclear, and low-temperature physics. Special research equipment includes a 21-foot concave grating and other instruments for visible, ultraviolet, and Raman spectra; facilities for research in microwave spectroscopy and other high-frequency phenomena; crystal counters and a liquid helium bubble chamber for use in high-energy particle research; a four-million-volt Van de Graaff accelerator and associated equipment for nuclear physics research; a helium liquifier, other low temperature equipment, and a large electromagnet for nuclear resonance research below 1° Kelvin.

The Physics Building contains the Mathematics-Physics library, and a shop staffed by six instrument mechanics, three electronics technicians, and a glass blower.

CHEMISTRY LABORATORIES. The Chemistry Building is a modern laboratory with a floor area of approximately 57,000 square feet. Of this space, over half is devoted to research and advanced teaching. Excellent facilities for research are available, including recording spectrophotometers for ultraviolet, visible, and infrared spectroscopy, a grating spectrograph, recording polarographs, paramagnetic resonance absorption equipment, and equipment for light-scattering measurements and vapor phase chromatography.

A well-equipped shop, operated by a competent mechanic, provides facilities for the construction of special apparatus and for the repair and maintenance of instruments.

The Chemistry Library, located in the building, has on its shelves over 18,500 volumes and currently subscribes to over 200 scientific periodicals.

PSYCHOLOGY LABORATORIES. Graduate work in psychology is carried on chiefly in three buildings on the East Campus providing about 20,000 square feet of floor space. Further facilities for psychology research and teaching are available in the laboratories and clinics at the Duke Medical Center. In addition to general research facilities, the Laboratories are specifically equipped for research in visual perception, small group behavior, human and animal learning, and in physiological psychology and neuropsychology. Special apparatus includes automatic computation equipment for research in test construction. A departmental shop, with a competent technician in charge, is maintained for the design, construction, and maintenance of special apparatus.

A number of clinical installations for adults and children, devoted to an extensive range of clinical and guidance problems, cooperate with the Department in providing additional facilities for research and training in clinical and counseling psychology. In addition, a nursery school is maintained in the laboratory.

An extensive collection of psychological journals and monographs is housed in a special psychology reading room in the Woman's College Library.

MEDICAL SCHOOL. In the School of Medicine elaborate facilities are provided for postgraduate research in the various branches of medical science. The Departments of Anatomy, Bacteriology, Mycology and Immunology, Biochemistry and Nutrition, and Physiology and Pharmacology offer certain courses and research facilities to students in the Graduate School of Arts and Sciences. The Duke Hospital Library is available to all graduate students.

ENGINEERING LABORATORIES. The College of Engineering Building is well equipped for research and instruction in the Departments of Civil, Electrical, and Mechanical Engineering. In addition to its own library and general resources, special facilities are provided for engineering graduate research in the several Departments, as follow—Civil Engineering: structural analysis, soil mechanics, materials of construction, and hydrodynamics; Electrical Engineering: dielectric materials, ferromagnetic materials, superconducting circuits, energy conversion, instrumentation, and high-voltage phenomena; Mechanical Engineering: heat transfer, environmental thermodynamics, vibration studies, and response of physical systems. These facilities are described in the *Bulletin of the College of Engineering.*

Duke Forest

The Duke Forest consists of approximately 7,200 acres of land, most of which is adjacent and easily accessible to the University campus. Situated in the lower Piedmont region and composed of second-growth shortleaf pine, loblolly pine, and hardwoods, the Forest is representative of the various types of timber growth and soils found throughout the region. Through placing the Forest under intensive management for forestry purposes, substantial progress has been made in developing the educational work and research in forestry.

The proximity of the Forest to the laboratories, greenhouses, and library facilities of the University provides an excellent opportunity for advanced study and research in forestry. Research, particularly in the fields of silvics, forest soils, silviculture, forest management, properties of wood, forest-tree physiology, forest entomology, and forest pathology, is well under way. Several members of the botany and zoology staffs are also engaged in research in the Duke Forest.

Commonwealth-Studies Center

Duke University, through a grant from the Carnegie Corporation in 1955, established a Studies Center to encourage and stimulate research by American and Commonwealth students and professors on economic, historical, and political problems of countries within the Commonwealth of Nations. During its initial stages the program has been centered on the "Old Commonwealth" (United Kingdom, Australia, New Zealand, Canada, and South Africa), although increased attention is being given to the newer Commonwealth countries in Africa and Asia.

During the first five years the Center's activities have been in several directions: (1) Faculty members from Duke have been assisted in research projects in Commonwealth countries. (2) A number of outstanding scholars were brought to Duke to deliver lectures which were later published in book or pamphlet form. (3) Visiting professors from the Commonwealth have come to Duke for varying periods of time. (4) Advanced graduate students from Duke were assisted in completing research work on Ph.D. dissertations in Commonwealth countries. (5) Students from the Commonwealth were awarded fellowships to Duke enabling them to complete work for the Ph.D. in economics, history, or political science. (6) Summer research groups have brought together for study at Duke qualified social scientists whose research interests relate to the Commonwealth.

Oak Ridge Institute of Nuclear Studies

Duke University is one of the sponsoring universities of the Oak Ridge Institute of Nuclear Studies located at Oak Ridge, Tennessee. Through this cooperative association with the Institute, the graduate research program has at its disposal all the facilities of the National Laboratories in Oak Ridge and of the research staffs of these laboratories.

Cooperative Programs with the Consolidated University of North Carolina

INTERCHANGE OF REGISTRATION. (See pp. 19-20.)

LIBRARY EXCHANGE. Students of both the University of North Carolina and Duke University are granted certain library privileges in the respective libraries of each University. Books unavailable in one library may be procured at short notice through an interlibrary loan service.

Research and Publication

The several departments of the University are devoted to research as well as to instruction. Since the University exists for the promotion and diffusion of knowledge, attention is rightly placed, in the Graduate School, on research activities.

In furtherance of the University's obligation to promote and diffuse knowledge, the President annually appoints a University Council on Research, which receives applications from members of the various faculties for subsidies in support of research. Vigorous and forward-looking policies of this Research Council have initiated and encouraged the completion of many substantial and important research projects.

The Duke University Press takes its place as a significant agency in the diffusion of knowledge. Created in 1925, as a successor to the Trinity College Press, the Duke University Press continued the publication of the *South Atlantic Quarterly,* published at Trinity College since 1902, and in 1926 revived the *Hispanic-American Historical Review,* which had been founded and published from 1918 to 1922 by a group of scholars interested in Hispanic America. In 1929 *American Literature* was begun with the cooperation of the American Literature Group of the Modern Language Association. This journal was followed in 1931 by *Ecological Monographs,* and in 1932, *Character and Personality* (since 1945 the *Journal of Personality*). In 1935 the Press began the publication of the *Duke Mathematical Journal;* in 1937, the

Journal of Parapsychology. Since 1948, it has published *Ecology*, the official journal of the Ecological Society of America. The Law School of Duke University publishes *Law and Contemporary Problems, The Duke Bar Journal,* and *The Journal of Legal Education.*

The Press, since is organization, has published more than three hundred volumes, including four series of monographs, and has thus made public the fruits of scholarly research of the Duke faculty and of scholars elsewhere. In the broadest sense, the policy of the Press is to make available to the public any scholarly work that merits publication though special attention is given to works in domains of knowledge cultivated by the University.

Visiting Scholars

The libraries and, to the extent practicable, other facilities of Duke University will be made available to faculty members of colleges and universities who wish to spend a period of time on the campus in pursuit of their scholarly interests. No fees will be charged such visitors unless they wish to participate in activities for which a special fee is assessed. Room and board may be arranged for at the regular rates in the dormitories and dining halls. Dormitory space is usually available during the summer months. Inquiries concerning residence for visiting scholars should be directed to the Dean of the Graduate School of Arts and Sciences.

Graduate Study in the Summer Session

The Summer Session of Duke University is divided into two terms. In 1960 the first term will begin on June 10 and will end on July 15 The second term will begin on July 16 and will end on August 20.

Graduate students who wish to work toward advanced degrees in the Summer Session, particularly in chemistry, economics, education, English, history, mathematics, religion, sociology, Spanish, and zoology, will find a selection of courses offered by members of the Duke faculty and by visiting professors. Other departments ordinarily offering work leading to the A.M. degree are botany, political science, and psychology. Thesis research for advanced graduate students is available also in other departments, such as botany, forestry, and physics.

Requirements for admission to the Graduate School are detailed above. Students who wish to be admitted to the Graduate School for work in the Summer Session should make application to the Dean of the Graduate School, as well as to the Director of the Summer Session, and should return the completed application, with supporting documents, before May 10, for admission to the first term, and before June 16. for admission to the second term.

REGULATIONS REGARDING SUMMER WORK. (a) No graduate student may register for more than six units of credit in one Summer Session term. (b) All of the work required for the A.M., M.A.T., or M.Ed. degree must be completed within six years of the date of beginning. (c) Not more than one year of summer work can be accepted toward the residence requirements beyond the minimum for the Ph.D. or Ed.D. degrees. See p. 31 for a definition of a year's residence credit earned in Summer Sessions. Students who complete in a summer session the work required by the University for the Master's degree will be granted the degree at the end of the summer.

A Summer Session Bulletin containing information about graduate courses may be obtained by addressing a request to the Director of the Summer Session, Duke University, Durham, N. C.

Courses of Instruction

In general, courses with odd numbers are offered in the fall semester, those with even numbers in the spring semester. Double numbers separated by a hyphen indicate that the course is a year-course and must normally be continued throughout the year if credit is received. A student must secure written permission from the instructor in order to receive credit for either semester of a year-course. Double numbers separated by a comma indicate that although the course is a year-course, credit may be received for either semester without special permission.

Normally, courses which bear no date are offered every year; those marked with an asterisk are offered only when the need arises.

Note: In each department the number 399 is reserved to designate special (individual) readings in a specified area and supervised by a regular member of the Graduate staff, credit 1-3 units. When used it appears in this form: [Department] 399, Special Readings in [area], (Instructor), 1 [2 or 3] unit.

AESTHETICS, ART, AND MUSIC

PROFESSOR PATRICK, CHAIRMAN; ASSOCIATE PROFESSORS HALL, MARKMAN, AND SUNDERLAND

AESTHETICS

FOR SENIORS AND GRADUATES

No graduate degree is offered in this department, but the following courses are suggested as possible minors for students majoring in history, literature, philosophy, religion, psychology, or sociology, or in any other interested departments.

221-222. HISTORY OF AESTHETICS.—Theories of art and beauty in the western world from antiquity to the present. Some attention will be given to the developed theories of aesthetics in the Far East. 6 units. (E) (Not 1960-61)

PROFESSOR PATRICK

ART

FOR SENIORS AND GRADUATES

215. RELIGIOUS ART OF THE ANCIENT NEAR EAST.—A specialized study of the development of art, particularly architecture and sculpture, as the material expression of religious ideas in Egypt, Mesopotamia, and in part of Syria and Palestine, to the Persian conquest. 3 units.* (W)

ASSOCIATE PROFESSOR MARKMAN

216. RELIGIOUS ART OF THE CLASSICAL WORLD.—A specialized study of the religious art, particularly architecture and sculpture, of Greece and Rome, with special emphasis on the monuments in the Near East. 3 units.* (W)

ASSOCIATE PROFESSOR MARKMAN

217. AEGEAN ART.—A study of the problems of Aegean art as the forerunner of Greek art and in relation to the contemporary civilization of the eastern Mediterranean world. 3 units. (W) (1960-61) ASSOCIATE PROFESSOR MARKMAN

218. EARLY GREEK ART.—A study of the problems of the origin and development of Greek art in the Geometric period to the end of the Archaic. 3 units. (W) (1960-61) ASSOCIATE PROFESSOR MARKMAN

233. EARLY MEDIAEVAL ARCHITECTURE.—The development of religious architecture from the time of Constantine to the end of the First Romanesque style in the third quarter of the eleventh century. 3 units.* (E)
ASSOCIATE PROFESSOR SUNDERLAND

234. ROMANESQUE SCULPTURE.—The development of sculpture in western Europe from the early Christian period through the culmination of Romanesque art in the west portal of Chartres Cathedral. 3 units. (E) (1960-61)
ASSOCIATE PROFESSOR SUNDERLAND

240. ARCHITECTURE OF NORTH AMERICA.—A study illustrating the transplantation of European architectural customs since the sixteenth century; the time-lag in transit and acceptance of later European developments; the gradual assumption of confident independence in design; and the emergence of international leaders in the United States. 3 units. (E) (1960-61) ASSOCIATE PROFESSOR HALL

ANATOMY

PROFESSOR J. E. MARKEE, DIRECTOR OF GRADUATE STUDIES—405 MEDICAL SCHOOL; PROFESSOR EVERETT, HETHERINGTON; ASSOCIATE PROFESSOR BECKER, DUKE, AND PEELE.

(See MEDICAL SCHOOL, p. 98)

M201. ANATOMY AS RELATED TO LOCOMOTION.—Complete dissection of that part of the body concerned with locomotion and posture. (See also Course M205). September to January. Prerequisites: One year each of biology, chemistry, and physics. 6 units.
PROFESSORS MARKEE AND EVERETT; ASSOCIATE PROFESSORS BECKER AND DUKE

M202. MICROSCOPIC ANATOMY.—Conferences and laboratory work on the morphological characteristics of the tissues of the animal body. The work is based upon a study of fresh and prepared material and is approached from the physiological viewpoint. Sept. to Jan. Hours and credits (maximum 3 units) by arrangement. Prerequisite: adequate training in histology or cytology.
PROFESSORS MARKEE, HETHERINGTON, AND EVERETT; ASSOCIATE PROFESSORS BECKER, DUKE, AND MOSES

M203. ANATOMY OF THE NERVOUS SYSTEM.—A study of the gross and microscopic structure of the human central nervous system, special attention being paid to the structural and functional relationships between the various nuclei and fiber tracts. Feb. to June. Hours and credits (maximum 4 units) by arrangement. Prerequisite: Anatomy M 201. PROFESSORS MARKEE AND EVERETT; ASSOCIATE PROFESSORS PEELE, BECKER, AND DUKE

M204. NEUROANATOMICAL BASIS OF BEHAVIOR.—A study of the gross and microscopic anatomy of the nervous system with emphasis on the structural and functional relationships between tracts, nuclei, and cortical areas. Restricted to graduate students with the equivalent of a major in psychology. (Jan. to June) 3 units. PROFESSOR HETHERINGTON; ASSOCIATE PROFESSOR PEELE

M205. ANATOMY OF THE VISCERA.—This is a study of the Gross Anatomy of the thoracic, abdominal and pelvic organs and the deeper structures of the head. This course may be taken concurrently with M 201. Sept. to Jan. Prerequisites: one year each of physiology, chemistry, and physics. 2 units.
PROFESSORS MARKEE, EVERETT; ASSOCIATE PROFESSORS BECKER AND DUKE

M301. GROSS HUMAN ANATOMY.—A course especially for Ph.D. candidates in Anatomy, comprising a complete dissection of the cadaver. The laboratory work is supplemented by conferences which place emphasis on the biological aspects of the subject. Sept. to June. Hours and credits (maximum 8 units) by arrangement. Prerequisites: adequate training in comparative anatomy and embryology.
PROFESSORS MARKEE AND EVERETT; ASSOCIATE PROFESSORS BECKER AND DUKE

M312. RESEARCH.—Individual investigations in the various fields of anatomy. Credits to be arranged. PROFESSORS MARKEE, EVERETT, HETHERINGTON; ASSOCIATE PROFESSORS PEELE, DUKE, BECKER, AND MOSES

M313-314. ANATOMY SEMINAR.—Weekly meeting of graduate students and staff in which current research problems in Anatomy will be presented. Required of all graduate students who are candidates for the A.M. or Ph.D. degree. 2 units.
PROFESSORS MARKEE, EVERETT, HETHERINGTON; ASSOCIATE PROFESSORS DUKE, PEELE, BECKER, MOSES

DIVISION OF ANCIENT LANGUAGES AND LITERATURE

PROFESSORS CLARK, ROGERS, STINESPRING, AND TRUESDALE; ASSOCIATE PROFESSOR WAY

GREEK

No graduate degree is offered in Greek.

FOR SENIORS AND GRADUATES

201-202. GREEK TRAGEDY. 6 units. PROFESSOR TRUESDALE

257. SOCIAL AND CULTURAL HISTORY OF THE HELLENISTIC WORLD FROM ALEXANDER TO AUGUSTUS.—Lectures, reading, and discussions. This course will not be separately credited without the sequel, Latin 258. 3 units.
PROFESSOR ROGERS

Graduate students of Duke University may attend the American School of Classical Studies in Athens, Greece, without charge for tuition, and they are eligible to compete for the fellowships that are offered annually by the School. These consist of two fellowships in Greek archaeology, and one in the language, literature, and history of ancient Greece, each with a stipend of $2,000. They are awarded mainly on the basis of examinations held in the beginning of February of each year.

LATIN AND ROMAN STUDIES

No graduate degree is offered in Latin.

FOR SENIORS AND GRADUATES

211-212. ROMAN ORATORY.—A survey of the history of Roman oratory, centering about the *Brutus* of Cicero and Tacitus' *Dialogus*. 6 units. (1960-61)
PROFESSOR ROGERS

258. SOCIAL AND CULTURAL HISTORY OF THE GRAECO-ROMAN WORLD.—The Roman Empire as the trustee of Hellenism and Christianity, and its own original contributions to modern civilization; lectures, readings, and discussions. This course continues Greek 257 and will not be separately credited. 3 units. PROFESSOR ROGERS

SEMITICS

FOR SENIORS AND GRADUATES

201-202. FIRST HEBREW.—The principles and structure of the Hebrew language, with translations of selected Old Testament narratives. 6 units.
PROFESSOR STINESPRING

207-208. SECOND HEBREW.—Samuel or Kings the first semester; Isaiah the second. 6 units.

FOR GRADUATES

304. ARAMAIC.—A study of the Aramaic portions of the Old Testament and selected passages from the Targums, Midrashes, and Talmuds. 3 units.
PROFESSOR STINESPRING

305. THIRD HEBREW.—A study of late Hebrew prose, with readings from Chronicles, Ecclesiastes, and the Mishnah. 3 units. (Not 1960-61)
PROFESSOR STINESPRING

307. SYRIAC.—A study of the script and grammar, with readings from the Syriac New Testament and other early Christian documents. Some knowledge of Hebrew and Aramaic is prerequisite. 3 units. (1960-61) PROFESSOR STINESPRING

309. HISTORY OF THE ANCIENT NEAR EAST.—A survey of the early civilizations of Egypt, Palestine, Syria, and Mesopotamia in the light of Biblical archaeology. 3 units. (Not 1960-61) PROFESSOR STINESPRING

RELATED COURSES IN OTHER DEPARTMENTS

Philosophy 217; Religion 217, 218, 220, 313, 316, 318.

Under the terms of a co-operative agreement graduate students of Duke University may, with the approval of the chairman of their major department, take any graduate course offered by the Department of Greek and Latin of the University of North Carolina by the payment of a nominal fee. A list of these courses will be sent upon request.

BIOCHEMISTRY AND NUTRITION

PROFESSOR PHILIP HANDLER, DIRECTOR OF GRADUATE STUDIES—237 BELL; PROFESSOR SCHWERT; ASSISTANT PROFESSORS BYRNE AND KAMIN; DRS. FRIDOVICH, GREEN, KIRSHNER, LYNN, AND WHEAT.

(See MEDICAL SCHOOL, p. 98)

M241. GENERAL BIOCHEMISTRY AND NUTRITION.—Three lectures, eight hours of laboratory, two hours of conference per week from November to April. This course is offered primarily for first-year medical students and is not generally recommended for graduate students. Since the laboratory space is limited, graduate students will be admitted only with the permission of the chairman of the department. Prerequisites: chemistry through organic chemistry, and at least one year of college biology. 8 units; 3 units without laboratory work.

ALL MEMBERS OF THE GRADUATE STAFF

M243-244. GENERAL BIOCHEMISTRY.—An introductory but intensive course in the broader aspects of biochemistry. Topics stressed include the chemistry of naturally occurring materials, nature of enzyme action, intermediary metabolism, and chemical aspects of the specialized behavior of mammals, plants and micro organisms. Prerequisites: organic chemistry and at least one year of college biology 6 units. ALL MEMBERS OF THE GRADUATE STAFF

M246. LABORATORY METHODS IN BIOCHEMISTRY.—A laboratory course emphasizing the procedures and instruments of biochemical research. Each technic is employed in the course of a classical experiment demonstrating an important biochemical finding. This course is designed to accompany Biochemistry M243-244 and may be taken concurrently with M244 during the spring semester or in the following year. Because the experimental materials are labile, one full day per week is spent in the laboratory. 2 units. ASSISTANT PROFESSOR DAVIDSON, AND DR. FRIDOVICH

M310. MICROBIAL PHYSIOLOGY.—A lecture and seminar course devoted to the physiology and comparative biochemistry of microorganisms. (Offered jointly with the Department of Microbiology.) 2 units.

ASSISTANT PROFESSOR PINE; DRS. WHEAT AND GREEN

M343-344. BIOCHEMISTRY OF PROTEINS AND ENZYMES.—A lecture and seminar course devoted to the chemical, physical, and biological properties of proteins and enzymes. In the first semester general aspects of protein chemistry will be considered; in the second semester specific proteins and enzymes will be discussed. Prerequisites: Biochemistry M241 or M243-244 or their equivalent and physical chemistry. 4 units.

M345, 346. SEMINAR.—Required of all graduate students majoring in biochemistry. 2 units. ALL MEMBERS OF THE GRADUATE STAFF

M349-350. INTERMEDIARY METABOLISM.—A seminar course devoted to a study of the detailed mechanisms of carbohydrate, fat and protein metabolism. Prerequisite: Biochemistry M241 or M243-244 or their equivalent. 6 units.

PROFESSOR HANDLER

M351. NUTRITION.—A seminar course in which the chemical and physiological behavior of essential nutritional factors is considered, as well as the nature of

deficiency states. Prerequisite: Biochemistry M241 or M243-244 or their equivalent. Given every third year. 2 units. (Not 1960-61) PROFESSOR HANDLER

M354. BIOCHEMISTRY OF DISEASE.—A lecture and seminar course in the biochemical aspects of the pathogenesis, diagnosis, and therapy of diseases of metabolism. 2 units. (Not 1960-61). PROFESSOR HANDLER

BOTANY

PROFESSOR OOSTING, CHAIRMAN—102A BIOLOGY BUILDING; PROFESSOR KRAMER, DIRECTOR OF GRADUATE STUDIES—04 BIOLOGY BUILDING; PROFESSORS ANDERSON, BILLINGS, HARRAR AND NAYLOR; ASSOCIATE PROFESSORS HUMM, PERRY, AND PHILPOTT; ASSISTANT PROFESSORS CULBERSON, JOHNSON, AND WILBUR

Graduate work in the Department of Botany is offered leading to the A.M. and Ph.D. degrees. Before undertaking graduate study in botany a student should have had in his undergraduate program at least 12 semester hours of botany beyond an elementary course, and related work in biological sciences. Some work in chemistry and physics will be desirable and, for some phases of botanical study, a necessity. The student's graduate program is planned to provide a broad basic training in the various fields of botany, plus intensive specialization in the field of the research problem.

FOR SENIORS AND GRADUATES

202. GENETICS.—The principles of heredity, their cytological basis, and their bearing on other fields of biology. Laboratory work involves experimental breeding of the fruit fly and interpretation of data from the breeding of plants. Offered in alternate years. Prerequisites: one year of botany, zoology, or equivalent, and college algebra. 4 units. (1960-61) ASSOCIATE PROFESSOR PERRY

203. PLANT CYTOLOGY.—A study of the structure and organization of plant cells in relation to growth, reproduction, and especially heredity. Prerequisite: one year of botany. 4 units. (1960-61) PROFESSOR ANDERSON

204. ADVANCED PLANT ANATOMY.—A study of vegetative and reproductive tissue of vascular plants including selection and preparation of fresh plant materials. An analysis of some of the significant literature bearing upon function, development, and phylogeny. Prerequisite: Botany 55 or equivalent. 4 units. (Not 1960-61) ASSISTANT PROFESSOR PHILPOTT

216. BOTANICAL MICROTECHNIQUE.—Methods and theory in preparation of plant tissues for temporary mounts and permanent microscopical slides. Prerequisite: two years of natural science. 4 units. (1960-61) ASSISTANT PROFESSOR PHILPOTT

218. ILLUSTRATIVE TECHNIQUES.—A study of botanical illustrative methods, including theory and use of the microscope, microscopical measurements, drawing, photomicrography, botanical photography, darkroom procedures, lantern slides, and the preparation of illustrative material for publication. Prerequisites: two semesters of botany, zoology or forestry. 2 units. (Not 1960-61) PROFESSOR ANDERSON

221. INTRODUCTORY MYCOLOGY.—Field and laboratory study of the vegetative and reproductive structures of the fungi and slime molds. Methods of collection, isolation, propagation, and identification of the major orders as represented in the local flora. Prerequisite: a year of biological science. 4 units. ASSISTANT PROFESSOR JOHNSON

225-226. SPECIAL PROBLEMS.—Students with adequate training may do special work in the following: (a) Mycology and Plant Pathology, (b) Cytology, (c) Ecology, (d) Genetics, (e) Morphology and Anatomy of Higher Plants, (f) Morphology and Taxonomy of Lower Groups, (g) Physiology, (i) Taxonomy of Higher Groups, (m) Microbiology. Credits to be arranged. ALL MEMBERS OF THE GRADUATE STAFF

252. PLANT METABOLISM.—The physico-chemical processes and conditions underlying the physiological processes of plants. Prerequisite: Botany 151 or equivalent; organic chemistry recommended. 3 units. ASSOCIATE PROFESSOR NAYLOR

254. PLANT WATER RELATIONS.—A study of factors affecting the availability of water, its absorption and use in plants, and the effects of water deficits on plant processes. Assigned readings, reports, and lectures. Prerequisite: Botany 151 or equivalent. 3 units. PROFESSOR KRAMER

255. ADVANCED TAXONOMY.—A study of the historical background of plant taxonomy, modern concepts and systems of classifications, nomenclatorial problems, and the taxonomy of specialized groups. Prerequisite: two years of botany, including Botany 52 or equivalent. 4 units. ASSISTANT PROFESSOR WILBUR

256. COMMUNITY ANALYSIS AND CLASSIFICATION.—The development of concepts and methods in synecology and their present application to the study of plant communities. Prerequisite: Botany 156 or equivalent. 3 units. (1960-61) PROFESSOR OOSTING

257. PRINCIPLES OF PLANT DISTRIBUTION.—Interpretation of the floristic and ecological plant geography of the world's vegetation. Prerequisite: Botany 156 or equivalent. 3 units. (Not 1960-61) ASSOCIATE PROFESSOR BILLINGS

258. PHYSIOLOGY OF GROWTH AND DEVELOPMENT.—Consideration of the internal factors and processes of new protoplasm and its differentiation at the cellular, tissue, and organ level in plants. Prerequisites: Botany 151 or equivalent; organic chemistry recommended. 3 units. ASSOCIATE PROFESSOR NAYLOR

259. ENVIRONMENTAL MEASUREMENTS.—Methods of obtaining and evaluating climatological data for ecological purposes with special attention to instrumentation and microclimate. Prerequisite: Botany 156 or equivalent. 3 units. (1960-61) ASSOCIATE PROFESSOR BILLINGS

305. VEGETATION OF NORTH AMERICA.—Distribution and limits of the major plant communities, a study in ecological plant geography. Prerequisite: Botany 156 or equivalent. 3 units. (Not 1960-61) PROFESSOR OOSTING

310. BRYOPHYTES.—The morphological and systematic characteristics of mosses and liverworts. 2 units (1960-61) PROFESSOR ANDERSON

311. ALGAE.—The morphological and ecological characteristics of the common freshwater and marine species and the principles underlying their classification. Collecting, identification, and the making of permanent microscopical preparations. 2 units. (1960-61) ASSOCIATE PROFESSOR HUMM

359-360. RESEARCH IN BOTANY.—Individual investigation in the various fields of botany. Credits to be arranged

PROFESSORS ANDERSON, HARRAR, KRAMER, AND OOSTING;
ASSOCIATE PROFESSORS BILLINGS, HUMM, NAYLOR, AND PERRY;
ASSISTANT PROFESSORS JOHNSON, PHILPOTT, AND WILBUR; DR. CULBERSON

397-398. GENERAL BOTANICAL SEMINAR.—One hour per week throughout the year. Required of all graduates majoring in botany. 2 units.

ALL MEMBERS OF THE GRADUATE STAFF

FOREST BOTANY

FOR SENIORS AND GRADUATES

223. FOREST PATHOLOGY.—Infectious and non-infectious diseases of forest trees, and related deterioration of forest products. Field and laboratory study of symptoms, etiology, and control. Prerequisites: Botany 1 and 2. 3 units.

ASSISTANT PROFESSOR JOHNSON

253. DENDROLOGY.—Nomenclature, classification, and identification of woody plants with special reference to species indigenous to southeastern United States and other important forest regions of temperate North America. Laboratory and field work. Prerequisite: one year of botany. 3 units. PROFESSOR HARRAR

RELATED COURSES IN OTHER DEPARTMENTS

This related course may be counted toward a major in botany: Forestry 257.

CHEMISTRY

PROFESSOR SAYLOR, CHAIRMAN—115 CHEMISTRY BUILDING; PROFESSOR BRADSHER, DIRECTOR OF GRADUATE STUDIES—124 CHEMISTRY BUILDING; PROFESSORS BIGELOW, BROWN, GLOCKLER (VISITING LECTURER), GROSS, HAUSER, HILL, AND HOBBS; ASSOCIATE PROFESSORS KRIGBAUM, STROBEL, AND WILDER; ASSISTANT PROFESSORS POIRIER, QUIN, AND SMITH

In the Department of Chemistry graduate work is offered leading to the A.M. and Ph.D. degrees. Before undertaking a graduate program in chemistry, a student should have taken an undergraduate major in chemistry along with related work in mathematics and physics.

Graduate courses in the department are designed to provide a broad basic training in the fields of inorganic, organic, analytical, and physical chemistry. An important requirement for the Ph.D. degree is the successful completion, under the direction of a member of the staff, of a research program leading to the solution of an original problem. The choice of the research problem, for either the A.M. or the Ph.D. degree, will determine the field of advanced specialization.

FOR SENIORS AND GRADUATES

206. ELEMENTS OF THEORETICAL CHEMISTRY.—A course in the general principles of physical chemistry for students who do not present credit in calculus. Credit is not given for both 206 and 261-262. Three recitations and three laboratory hours. Prerequisites: quantitative analysis, organic chemistry 8 units; physics 8 units, and mathematics 6 units. With the permission of the Director of Graduate Studies, graduate students from other departments may offer other advanced science courses in lieu of some of these prerequisites. 4 units.

PROFESSOR SAYLOR AND ASSISTANT PROFESSOR POIRIER

215. ADVANCED INORGANIC CHEMISTRY.—A study of modern theories of valence and molecular structure and inorganic compounds, particularly the less common types. Prerequisites: Chemistry 261-262, or 206. 3 units.

PROFESSOR HILL

216. NUCLEAR CHEMISTRY.—Types and elementary theory of nuclear reactions and the considerations involved in the use of tracers in chemical studies. Prerequisite: Chemistry 261-262; 262 may be taken concurrently. 2 units. (1960-61)

PROFESSOR HILL

234. CHEMICAL INSTRUMENTATION.—Discussion of physico-chemical principles as applied to instrumental methods of analysis, illustrated by laboratory experiments, with emphasis on methods involving electrical techniques. One lecture and three laboratory hours per week. Prerequisites: quantitative analysis and either 261-262 or 206; either of the latter may be taken concurrently. 2 units.

ASSOCIATE PROFESSOR STROBEL

251. QUALITATIVE ORGANIC ANALYSIS.—Systematic identification of organic compounds, including a study of solubilities and classification reactions. One lecture and three or six laboratory hours per week. Prerequisites: quantitative analysis and 8 units of organic chemistry. 2 or 3 units. PROFESSOR HAUSER

252. ADVANCED ORGANIC PREPARATIONS.—A laboratory course designed to supplement the student's knowledge of fundamental organic processes by a selected group of laboratory exercises accompanied by oral discussions of techniques and theories pertinent to the experiments. Five hours laboratory and lecture, with lectures in alternate weeks. Prerequisites: quantitative analysis and 8 units of organic chemistry. 2 units. PROFESSOR BROWN

261-262. PHYSICAL CHEMISTRY.—Fundamentals of general theoretical chemistry illustrated by selected laboratory experiments. Three recitations and three laboratory hours. Prerequisites: quantitative analysis and 8 units of organic chemistry, physics 8 units, differential and integral calculus. 8 units.

PROFESSOR HOBBS AND ASSISTANT PROFESSOR SMITH

271. INTRODUCTION TO RESEARCH.—Lectures on the use of chemical literature, research methods, recording and publication of results, and other topics. One lecture per week. 1 unit. PROFESSOR BROWN

275, 276. RESEARCH.—The aim of this course is to give instruction in methods used in the investigation of original problems. Individual work and conferences. 2 to 6 units. ALL MEMBERS OF THE GRADUATE STAFF

FOR GRADUATES

303. THERMODYNAMICS.—Fundamental laws of thermodynamics and their applications to chemistry and physics. 3 units. PROFESSOR SAYLOR

304. PHYSICAL CHEMISTRY OF REACTIONS.—The theoretical aspects of reaction kinetics, chemical equilibrium, atomic and molecular forces, and the relation of these to chemical reactions are considered. Prerequisite: Chemistry 261-262. 3 units. ASSISTANT PROFESSOR SMITH

331, 332. SEMINAR IN ANALYTICAL AND INORGANIC CHEMISTRY.—Lectures, oral reports, and discussion on advanced topics and recent advances in the allied fields of analytical and inorganic chemistry. Prerequisites: Chemistry 215, and 233 or 234. 2 units.* PROFESSORS HILL AND SAYLOR

341, 342. ADVANCED ORGANIC CHEMISTRY.—Discussion of the theories of organic chemistry with special reference in the first semester to the mechanism of reactions and in the second semester to the synthesis of some of the more complex compounds such as vitamins, hormones, and alkaloids. Undergraduates are admitted to this course only by permission of the Director of Undergraduate Studies. Prerequisites: 8 units of organic chemistry. 4 units.
PROFESSORS BIGELOW AND HAUSER

350. ORGANIC REACTIONS.—A study of the scope and limitations of the more important types of reactions of organic chemistry from the point of view of their practical use in the synthesis of organic compounds. Prerequisites: Chemistry 251 and 341. 2 units. (1960-61). PROFESSOR BRADSHER

351-352. ADVANCED SYNTHETIC ORGANIC CHEMISTRY.—Recent advances in certain selected fields, such as the mechanism of organic reactions, medicinals, dyes, perfumes, terpenes, and alkaloids, will be discussed. The emphasis will be placed on structure studies and synthetic methods. Lecture or seminar one hour each week. 2 units. PROFESSORS BIGELOW AND HAUSER

354. STEREOCHEMISTRY.—A study of recent advances in the stereochemistry of organic compounds including conformations and stereospecific reactions. The use of spectrophotometric methods for the determination of structure will be discussed. Prerequisites: Chemistry 251 and 341. 2 units. (Not 1960-61)
ASSOCIATE PROFESSOR WILDER

360. POLYMER CHEMISTRY.—A survey of the methods of preparation of high-molecular-weight organic compounds and a study of the properties characteristic of macromolecules in solution and in the solid state. Prerequisite: Chemistry 303. 2 units. ASSOCIATE PROFESSOR KRIGBAUM

363, 364. SPECIAL TOPICS IN PHYSICAL CHEMISTRY.—Various topics in physical chemistry which are of special interest to the staff or students are considered, such as absorption and scattering of light, dielectric phenomena, electrode processes, electrolyte theory, ion exchange, molecular structure and solubility. Seminar. Prerequisites: Chemistry 261-262 and 303. 2 units. (1960-61)
PROFESSORS GLOCKLER, HILL, HOBBS, AND SAYLOR; ASSOCIATE PROFESSORS KRIGBAUM AND STROBEL; ASSISTANT PROFESSORS POIRIER AND SMITH

365-366. CHEMICAL PHYSICS, STATISTICAL THEORY.—General introduction to classical and quantum statistical mechanics and applications to chemical problems including: calculation of thermodynamic functions of gases, liquids and solids; solution theory; reaction velocity; and changes of state. 6 units. (365, Not 1960-61: 366, Fall 1960-61) ASSISTANT PROFESSOR POIRIER

367-368. CHEMICAL PHYSICS, QUANTUM THEORY.—General introduction to the quantum theory of atomic and molecular forces and the structure of matter 6 units. (367, Spring 1960-61; 368, Not 1960-61) ASSISTANT PROFESSOR POIRIER

373, 374. SEMINAR.—Required of all graduate students in chemistry. One hour a week discussion. 2 units. ALL MEMBERS OF THE GRADUATE STAFF

COMPARATIVE LITERATURE

No graduate degree is offered in Comparative Literature. The following courses may serve in the minor programs of students in other departments. Professor Salinger is Chairman of the Department of German.

201, 202. ROMANTICISM.—Studies in the origin, rise and development of the Romantic Movement in the chief literatures of the Western world. The approach is comparative; the principal emphasis will be on England, France, and Germany with some reference to other countries. Selected subjects will be covered in lectures by speakers from various departments of the University. 6 units. (1960-61)
PROFESSOR SALINGER

203, 204. REALISM AND SYMBOLISM.—Comparative studies in the literatures of England, France, Germany, Russia, the Scandinavian countries, Spain and Italy, tracing the decline of romantic individualism and the reappraisal of man's significance against the social background. Selected subjects will be covered in lectures by speakers from various departments of the University. 6 units. (Not 1960-61)
PROFESSOR SALINGER

ECONOMICS

PROFESSOR DE VYVER, CHAIRMAN—203 SOCIAL SCIENCE; PROFESSOR SPENGLER, DIRECTOR OF GRADUATE STUDIES—322 LIBRARY; PROFESSORS BLACK, CARTTER, HANNA, HOOVER, HUMPHREY, LANDON, RATCHFORD, SIMMONS, AND SMITH; ASSOCIATE PROFESSOR DEWEY; ASSISTANT PROFESSORS FERGUSON AND YOHE

Graduate work in the Department of Economics is offered leading to the A.M. and Ph.D. degrees. To enter upon graduate work in economics a student should have completed with satisfactory grades at least 12 semester hours of undergraduate work in economics, including 6 hours of Principles of Economics. Among the undergraduate courses of distinct advantage to the graduate student specializing in economics are: General Accounting Elementary Statistics, Intermediate Economic Theory, and basic courses in philosophy, psychology, the social sciences other than economics, and mathematics.

The fields from among which students working toward a Ph.D. degree in economics may choose for purposes of concentration are: Economic Theory, History of Economic Thought, Demographic and Economic Growth and Change, Economic History, Economic Systems, Industrial and Organizational Economics, International Trade, Labor Economics, Mathematical and Econometrical Economics, Money and Banking, Public Finance, Statistics and National Income, and (occasionally) especially arranged fields. The requirements for the Ph.D. degree in economics normally include (among other things) completion of the work (or its equivalent) making up the first of these fields, together with four additional fields; courses in several other fields; Economics 237-238, or equivalent work; and two or three courses in minor fields. When circumstances warrant, these requirements are subject to modification. Students electing Statistics and National Income as a field must complete courses in mathematical statistics and probability, or equivalents.

FOR SENIORS AND GRADUATES†

233. STATE AND LOCAL FINANCE.—A study of expenditures, taxation, and financial administration in state and local governments with emphasis on current problems. Special attention will be given to research methods and materials and to the financial relations between state and local governments. 3 units.*†
PROFESSOR RATCHFORD

237-238. STATISTICAL METHODS.—A study of statistical methods appropriate for dealing with problems in business and the social sciences. In addition to developing more thoroughly the subjects considered in *Business Statistics,* the following methods will be considered: multiple, partial, and curvilinear correlation; curve fitting; probability; sampling distributions; and statistical inference. Pre-

requisite: Economics 138 or consent of the instructor. Either semester may be taken for credit. 6 units. PROFESSOR HANNA

240. NATIONAL INCOME.—A critical survey of the conceptual framework and structure of national income and its components, the reliability of national income estimates, and their use in analyzing questions of economic policy. 3 units. (1960-61) PROFESSOR HANNA

243. MATHEMATICAL ECONOMICS.—A systematic survey of mathematical economic theory. The principal topics are: vector spaces and matrices; macrostatics, especially input-output systems; and microstatics, especially models of the firm employing game theory and activity analysis. This course is a continuation of Economics 300. 3 units. ASSISTANT PROFESSOR FERGUSON

244. INTRODUCTION TO ECONOMETRICS.—The implementation of economic theory by statistical testing and estimation. The course is composed of lectures on statistical theory for linear systems and of a workshop in applied econometrics. Data processing and programming for digital computor is studied, and the class participates in solution of a problem by use of computor. 3 units. ASSISTANT PROFESSOR FERGUSON

256. LABOR LEGISLATION AND SOCIAL INSURANCE.—A study of the relations of the state to labor problems with special reference to remedial legislation, to interference in labor disputes, and to social insurance. 3 units. (1961-62)† PROFESSOR DE VYVER

262. TRADE UNIONISM AND COLLECTIVE BARGAINING.—An intensive survey of the trade union as an economic institution is followed by a study of the principles and problems of union-management relationship as found in collective bargaining. 3 units. (1960-61)† PROFESSOR DE VYVER

275-276. ADVANCED INDUSTRIAL ACCOUNTING AND MANAGEMENT.—A comprehensive examination of the rationale and techniques of control methods used in industry. Emphasis is laid on a critical evaluation of the practices followed by job-order, process, and standard costing, as well as the economics of overhead costs. Prerequisites: Economics 171-172 and permission of the Department. 6 units. PROFESSOR BLACK

FOR GRADUATES

300. INTRODUCTORY MATHEMATICAL ECONOMICS.—This course is designed to acquaint the student with mathematical methods of economic analysis, especially difference and differential equations. These tools are applied to macrodynamic models. 3 units. ASSISTANT PROFESSOR FERGUSON

301. ECONOMIC ANALYSIS.—Review of contemporary theory relating to consumer behavior, production, the firm, price formation, income distribution, and equilibrium. 3 units. ASSISTANT PROFESSOR FERGUSON

304, 305. SEMINAR IN MONEY AND BANKING.—3 units each. (1961-62) PROFESSOR SIMMONS

311-312. HISTORY OF POLITICAL ECONOMY.—A detailed review of the development of economics theory, the tools of economic analysis, and economics as a science, together with an analysis of the circumstances affecting this development. Period covered: pre-Christian times through 1936. 6 units. (1961-62) PROFESSOR SPENGLER

313-314. SEMINAR IN ECONOMIC THEORY.—The course consists of directed research in economic theory. The primary purpose is the correction of authoritative eclecticism and its replacement by individually integrated theory. Prerequisite: Economics 301 or its equivalent. 6 units. PROFESSOR HOOVER

315. SEMINAR IN ECONOMIC SYSTEMS.—3 units. (1960-61) PROFESSOR HOOVER

† Graduate students in Economics normally will not receive credit for courses 233, 256, and 262. These courses may be taken for credit by non-Economics graduate students, with the consent of the instructor.

316. SEMINAR IN ECONOMIC FUNCTIONS OF THE STATE.—3 units. (1960-61) PROFESSOR HOOVER

317. SEMINAR IN DEMOGRAPHIC, POPULATION, AND RESOURCE PROBLEMS.—3 units. (1960-61) PROFESSOR SPENGLER

318. GENERAL SEMINAR IN ECONOMICS.—All graduate students with economics as a major subject are members of this seminar. Reports of progress in research will be made, and there will be lectures and critical discussion by members of the Department. Year course. No credit. ALL MEMBERS OF THE GRADUATE STAFF

319. SEMINAR IN THE THEORY AND THE PROBLEMS OF ECONOMIC GROWTH AND CHANGE.—3 units. PROFESSOR SPENGLER

320. SEMINAR IN TRADE CYCLE, EMPLOYMENT, AND INCOME THEORY.—3 units. ASSISTANT PROFESSOR YOHE

321-322. ECONOMIC WORKSHOP.—6 units. PROFESSORS SPENGLER AND SMITH

329. FEDERAL FINANCE.—A study of the expenditures, revenues, and financial administration of the government of the United States, with emphasis on current problems. Special attention given to budgetary procedure, corporate and individual income taxes, and the financial relations between federal and state governments. Prerequisite: Economics 187 or consent of instructor. 3 units. (1960-61) PROFESSOR RATCHFORD

330. SEMINAR IN PUBLIC FINANCE.—3 units. (1960-61) PROFESSOR RATCHFORD

331. SEMINAR IN ECONOMIC HISTORY.—3 units (1960-61) PROFESSOR SMITH

355. SEMINAR IN LABOR ECONOMICS.—3 units. (1960-61) PROFESSOR DE VYVER

358. SEMINAR IN LABOR MARKET AND RELATED ANALYSIS.—3 units. (1961-62) PROFESSOR CARTTER

365. SEMINAR IN INTERNATIONAL TRADE.—3 units. (1960-61) PROFESSOR HUMPHREY

386. SEMINAR IN LATIN-AMERICAN ECONOMIC PROBLEMS.—3 units. (1960-61) PROFESSOR SMITH

389. SEMINAR IN INDUSTRIAL AND GOVERNMENTAL PROBLEMS.—3 units. (1960-61)

401. SEMINAR ON THE BRITISH COMMONWEALTH.—3 units. PROFESSORS SPENGLER, COLE, HAMILTON, AND BRAIBANTI

RELATED COURSES IN OTHER DEPARTMENTS

Courses comprising a candidate's minor may be selected from fields of forestry, history, mathematics, philosophy, physics, political science, psychology, and sociology and anthropology, or from an area that complements the candidate's area of research interests in economics.

EDUCATION

PROFESSOR CARTWRIGHT, CHAIRMAN—08D WEST DUKE BUILDING; PROFESSOR BOLMEIER, DIRECTOR OF GRADUATE STUDIES—08B WEST DUKE BUILDING; PROFESSORS CARR AND HURLBURT; ASSOCIATE PROFESSORS COLVER, GEHMAN, PETTY, RUDISILL, STUMPF, AND WEITZ; ASSISTANT PROFESSOR DUNNING

FOR SENIORS AND GRADUATES

Graduate work in Education is offered leading to the A.M., the M.Ed., the M.A.T., and the Ed.D. degrees. For each of these degrees there are specific requirements and prerequisites, all of which may be found stated in detail in this *Bulletin,* pp. 24-34. Departmental requirements and prerequisites for all of these degrees may be obtained from the Director of Graduate Studies.

(Some courses below are offered only in the Summer Session; see the Summer Session *Bulletin.*)

201. TEACHING AND SUPERVISION OF ARITHMETIC.—This course gives special attention to the number system, the fundamental operations (with whole numbers, fractions, and decimals), percentage, and measurements. The course will consider the meaning theory, method of teaching, problem solving, evaluation, practice and drill, and selection and gradation of arithmetical contents. The course is designed for teachers and supervisors in the elementary school. 3 units.
ASSOCIATE PROFESSOR PETTY

203. PRINCIPLES OF SCHOOL ADMINISTRATION.—The fundamental facts and procedures of school administration, an analysis of the problems and policies of the organization and direction of a local school system, and the functions of the various school officials. 3 units. PROFESSORS BOLMEIER AND HURLBURT AND ASSOCIATE PROFESSOR STUMPF

204. THE SCHOOL AS AN INSTITUTION.—Consideration is given to the place of the school in the American social order, and its adaptation to social, economic, and political changes. Special attention is directed to the responsibility (1) of the school for seeking solutions to the perplexing problems of youth created by a changing society; and (2) of the government for providing greater equality of educational opportunities. 3 units. PROFESSOR BOLMEIER

205. CURRICULUM PROBLEMS IN SECONDARY EDUCATION.—A consideration of the aims and objectives of secondary-school subjects, emphasizing practical problems of curriculum-making in the high school. 3 units.*
PROFESSOR CARTWRIGHT

210. INTRODUCTION TO EDUCATIONAL RESEARCH.—The general purpose of this course is to give the student an overview of research, acquaint him with the nature of research processes, and develop within him an appreciation of the essential characteristics of good research. 3 units. ASSOCIATE PROFESSOR STUMPF

213. ELEMENTARY-SCHOOL ORGANIZATION AND ADMINISTRATION.—This course is designed especially for principals, teachers, and other prospective members of the elementary-school staff. The scope of elementary education is considered to encompass nursery school, kindergarten, and the elementary school. Special treatment is given to the problems of internal organization and management of the elementary school and its integration with the secondary-school level. 3 units.*
ASSOCIATE PROFESSOR STUMPF

215. SECONDARY EDUCATION: PRINCIPLES.—Intensive study of principles, curriculum, and methods in secondary education. Accelerated course meeting six hours a week for half a semester. Must be accompanied by Education 216. 3 units.
PROFESSOR CARTWRIGHT AND HURLBURT; ASSISTANT PROFESSORS DUNNING AND REYNOLDS

216. SECONDARY EDUCATION: INTERNSHIP.—Supervised internship in junior or senior high schools. Full-time observation and teaching for half a semester, accompanied by Education 215; OR, with permission of the Department, full-time teaching for a semester, accompanied by Education 315. Students carrying Education 216 for credit toward a master's degree will be required to take six hours of senior or graduate work in addition to the normal degree requirements. 6 units. PROFESSORS CARTWRIGHT AND HURLBURT; ASSISTANT PROFESSORS DUNNING AND REYNOLDS

217. THE PSYCHOLOGICAL PRINCIPLES OF EDUCATION.—An advanced study of teaching, learning, and the learner. Selected problems guiding the reading of students will be discussed in class. 3 units.
ASSOCIATE PROFESSORS GEHMAN AND WEITZ

222. THE CURRICULUM AND MATERIALS OF THE ELEMENTARY GRADES.—A study of curriculum problems in the elementary schools. 3 units.*
PROFESSOR HURLBURT

224. TEACHING THE SOCIAL STUDIES IN ELEMENTARY SCHOOLS.—This course will treat objectives, curriculum trends, methods, and materials in elementary-school social studies. Topics to receive emphasis include unit-planning,

use of the textbook, the reading program, using community resources, audio-visual materials, dealing with controversial issues, teaching time and place concepts, and evaluation. Opportunity will be provided for teachers to work on their own school problems in the social studies. 3 units. PROFESSOR CARTWRIGHT

225. THE TEACHING OF HISTORY AND THE SOCIAL STUDIES.—Evaluation of the objectives, content, materials, and methods in the teaching of history and the social studies. 3 units. PROFESSOR CARTWRIGHT

226. TEACHING READING IN THE ELEMENTARY SCHOOL.—A study of the nature of the reading process and of principles, methods, and materials for the development of effective reading attitudes and skills as applied both to developmental and remedial programs. 3 units. ASSOCIATE PROFESSOR RUDISILL

228. IMPROVEMENT OF INSTRUCTION IN THE SOCIAL STUDIES.—An advanced treatment of curriculum, methods, and materials in the social studies. Individuals will concentrate on subjects and grade levels of their choice. 3 units. PROFESSOR CARTWRIGHT

232. SUPERVISION OF INSTRUCTION.—A survey of supervision as a means of improving instruction and adapting the curriculum to the learner and to community needs. 3 units.* PROFESSOR CARR

234. SECONDARY-SCHOOL ORGANIZATION AND ADMINISTRATION.—This course is designed especially for principals, teachers, and other prospective members of the secondary-school staff. The scope of secondary education is considered to encompass junior high school, regular high school, senior high, and junior college. Special treatment is given to the problems of internal organization and management. 3 units. PROFESSOR BOLMEIER

235. THE NATURE, FUNCTION, AND REORGANIZATION OF THE CURRICULUM.—Selected problems guiding the reading of students. 3 units. PROFESSORS CARR AND CARTWRIGHT

236. TEACHING READING IN THE SECONDARY SCHOOL.—A study of the nature of the reading process and of principles, methods, and materials for the development of effective reading attitudes and skills as applied both to developmental and remedial programs. The course provides practice with secondary-school children suffering reading retardation, including testing, diagnosis, and daily remedial teaching during a six-week period. For secondary-school teachers of all subjects who wish to improve the reading and study habits of their students. 3 units. ASSOCIATE PROFESSOR RUDISILL

237. LITERATURE FOR ADOLESCENTS.—This course offers a critical survey of literature written for, or appropriate for junior and senior high school students. Fiction, non-fiction, biography, poetry, and drama are examined. Both adult and transition-type literature are considered. Methods of organizing the program in literature are explored. 3 units. ASSISTANT PROFESSOR DUNNING

239. METHODS AND PROBLEMS OF TEACHING ENGLISH IN SECONDARY SCHOOLS.—This course will present sound methods of teaching the reading of literature and other forms of writing, language, grammar, and composition. Materials will include selections found in widely adopted textbooks, numerous specimen themes for grading, and current books and articles in the field. Several short compositions and a report will be required. 3 units. ASSOCIATE PROFESSOR BOWMAN AND ASSISTANT PROFESSOR DUNNING

240. EDUCATIONAL AND OCCUPATIONAL INFORMATION.—A study of the sources of occupational and educational information: methods of securing and organizing occupational information; methods of providing vocational and educational information to students through career days, college conferences, class activities, and individual counseling; methods of making job analyses and community occupational surveys. 3 units.* ASSOCIATE PROFESSOR COLVER

241. PRINCIPLES OF GUIDANCE.—An historical survey of the philosophies of guidance; a study of the interrelationships between instruction, administration, and guidance in education. Prerequisite: 6 hours of psychology or educational psychology. 3 units. ASSOCIATE PROFESSOR COLVER

242. MEASUREMENT OF APTITUDES, INTEREST, AND ACHIEVEMENT.—A study of the theories and principles of psychological measurement as applied to aptitude, interest, and achievement testing. Prerequisite: 12 hours of psychology or educational psychology (6 hours of which may be taken concurrently). 3 units.
PROFESSOR KUDER

243. PERSONALITY DYNAMICS.—A study of personality structure and dynamics with emphasis upon the implications for counseling and instruction. Prerequisite: 6 hours of psychology or educational psychology. 3 units.
ASSOCIATE PROFESSOR GEHMAN

244. COUNSELING TECHNIQUES.—A study of individual counseling techniques including diagnosis, interviewing, program planning, and counseling evaluation. Prerequisite: Education 242 and 243 or equivalent, which may be taken concurrently. 3 units. ASSOCIATE PROFESSOR GEHMAN

246. THE TEACHING OF MATHEMATICS.—This course deals with such topics as aims, curriculum, course and lesson planning, and classroom procedure for teaching secondary-school mathematics. 3 units. ASSISTANT PROFESSOR REYNOLDS

248. PRACTICUM IN COUNSELING.—Practice in individual counseling, including test administration, intake interviewing, diagnosis, counseling, program planning, report preparation, and evaluation. The student will be expected to devote about 150 hours to case work and conferences with his supervisor. Prerequisite: Education 244. 3 units. ASSOCIATE PROFESSOR WEITZ

253. SCHOOL LAW.—The primary purpose of this course is to familiarize prospective school administrators and teachers with the legal features of school organization and administration. Although some attention is given to constitutional and statutory provisions, the main emphasis is upon court decisions relating to education. Students are expected to select appropriate problems in school law for intensive study. 3 units. PROFESSOR BOLMEIER

258. EDUCATIONAL MEASUREMENTS.—A critical study of the principles and techniques involved in measurement in education, with opportunity for individual research. Prerequisite: twelve semester hours in the Department, including a course in educational psychology. 3 units. ASSOCIATE PROFESSOR WEITZ

266. SCIENCE IN THE ELEMENTARY SCHOOL.—Presentation of basic concepts in natural and physical science through selected readings, the use of simple experiments and demonstrations, construction and use of equipment, and field studies. 3 units.*

276. THE TEACHING OF HIGH-SCHOOL SCIENCE.—Discussion, lectures and collateral reading, related to such topics as aims, tests, curriculum, classroom and laboratory procedure, field trips, course and lesson planning for secondary-school science. 3 units.

290. ADMINISTRATION OF SCHOOL PROPERTY.—Planning and management of the school plant and its equipment to meet instructional, health, and community needs for immediate and long-range purposes. This course is intended for teachers, principals, and superintendents. Areas to be treated will include site selection; trends in design, lighting, ventilation, and heating; custodial service and maintenance; and financing. 3 units.* ASSOCIATE PROFESSOR STUMPF

FOR GRADUATES

315. SEMINAR IN SECONDARY SCHOOL TEACHING.—Advanced-level consideration of principles, practices, and problems in secondary school instruction. Designed particularly to accompany an internship. For students without previous internship credit, this course must be accompanied by Education 216. 3 units.
PROFESSOR HURLBURT

323. PUBLIC SCHOOL FINANCE.—A study of educational costs, sources of revenue for the support of public education, collection of revenue, basis of distribution, and accounting for funds spent. 3 units.* ASSOCIATE PROFESSOR STUMPF

335-336. SEMINAR IN SCHOOL ADMINISTRATION.—Organization and control over public education. During the first semester special attention is given to "external control" such as is exercised by various branches and levels of government and by professional and lay groups. "Internal control" as this relates to the principal, the teaching staff, and methods of classroom control is considered in the second semester. 6 units each semester. PROFESSORS BOLMEIER, HURLBURT; ASSOCIATE PROFESSORS PETTY AND STUMPF

354. SEMINAR IN SCHOOL LAW. 3 units. PROFESSOR E. C. BOLMEIER

ENGINEERING

CIVIL ENGINEERING

PROFESSOR ROWE, CHAIRMAN AND DIRECTOR OF GRADUATE STUDIES—121 ENGINEERING; PROFESSOR WILLIAMS; ASSOCIATE PROFESSOR GARDNER

The Department of Civil Engineering offers graduate work leading to the Master of Science degree. A broad approach is emphasized and fundamental principles are stressed. Narrowly specialized courses are not offered. Each graduate student therefore engages in a program that is designed to give him technical competence in mathematics, physics, or chemistry, and the civil engineering sciences. A student may concentrate on one of the following fields of civil engineering: hydraulic engineering, soils engineering, or structural engineering.

A minimum prerequisite to the graduate program will be mathematics through linear differential equations, mechanics of materials, structural theory and design, fluid mechanics, and location procedure.

CE 201. THEORETICAL AND APPLIED MECHANICS.—Introduction to the theory of elasticity, vibrations analysis, and hydrodynamics. (Same course as ME 201.) 3 units. PROFESSORS ROWE AND MACDUFF

CE 202. ADVANCED MECHANICS OF MATERIALS AND EXPERIMENTAL STRESS ANALYSIS.—The analysis of stress and strain in deformable bodies, correlation of theory with data from experiment. Photoelasticity. Strain gages. Similitude. 3 units. PROFESSOR ROWE

CE 231. STRUCTURAL THEORY AND ANALYSIS.—The application of the fundamental theories of structural action to the design and analysis of structural members. The Gauss Scheme. Specifications. Planning of CE projects. 3 units. PROFESSOR ROWE

CE 232. REINFORCED CONCRETE THEORY.—Design and analysis of reinforced concrete members including plates and shells. Prestressed and postressed concrete members. 3 units. ASSOCIATE PROFESSOR GARDNER

CE 235. FOUNDATION ENGINEERING.—The theory and application of soil mechanics to the design and analysis of foundations, subsurface structures, and earth works. 3 units. ASSOCIATE PROFESSOR GARDNER

CE 242. HYDRAULIC ENGINEERING.—Fundamental principles of flow, effects of gravity, viscosity, compressibility, and surface tension of fluid motion in closed conduits and open channels; surface and form resistance; hydraulic similitude. Fundamentals of applied hydrology. 3 units. PROFESSOR WILLIAMS

CE 297-298. THESIS RESEARCH.—A student with the proper background may carry on research under the direction of the staff in one of the following fields: foundation engineering; hydraulic engineering, and structural engineering. Thesis credit only. 6 units. ALL MEMBERS OF THE GRADUATE STAFF

ELECTRICAL ENGINEERING

PROFESSOR VAIL, CHAIRMAN AND DIRECTOR OF GRADUATE STUDIES—131 ENGINEERING PROFESSOR MEIER; ASSOCIATE PROFESSORS ARTLEY, OWEN, AND WILSON

The Department of Electrical Engineering offers graduate work leading to the degree of Master of Science. Students may specialize in any of the following fields; dielectric materials; ferromagnetic materials; energy conversion; instrumentation;

high voltage phenomena. The major requirement of 12 units in electrical engineering is normally met by taking courses EE 201 and EE 202, plus two other courses which are so selected as to provide background for the specialized thesis research. The minor requirement of 12 units outside of engineering is normally met by Mathematics 285, 286 and Physics 213, 214.

A minimum prerequisite to the graduate courses in electrical engineering is a basic knowledge of differential equations, electric and magnetic field theory, and the theory of networks.

EE 201. ENERGY SYSTEMS.—Consideration of general concepts of energy storage, transfer, transformation, and control that are applicable to a wide variety of technical systems, with emphasis on their common mathematical structure. Included are electrical, magnetic, mechanical, hydraulic, aerodynamic, and thermal systems. Applications to specific engineering devices and machines. Prerequisite: permission of instructor. 3 units. ASSOCIATE PROFESSOR ARTLEY

EE 202. INFORMATION SYSTEMS.—Consideration of general concepts of information storage, transfer, and processing. Optimum total response of information handling systems, including considerations of stability and dynamic response in the time and frequency domains. Applications to communications networks and devices, including an introduction to computers. Prerequisite: permission of instructor. 3 units. ASSOCIATE PROFESSOR OWEN

EE 211. SOLID STATE ENGINEERING.—An introduction to concepts and engineering applications of solid state physics: crystalline structure and thermal properties of solids; insulators, semiconductors, and conductors; magnetic materials. Prerequisite: permission of instructor. 3 units. PROFESSOR VAIL

EE 222. NONLINEAR ELECTROMAGNETICS.—Analytic approximations for nonlinear characteristics; use of idealized components in the analysis of piecewise-linear systems; approaches applicable when a material such as high-permeability steel possesses characteristics which are different under static and dynamic conditions; applications to devices such as transductors, self-saturating magnetic amplifiers, modulators, ferroresonant circuits, relaxation oscillators and parametric amplifiers. Prerequisite: permission of instructor. 3 units.

ASSOCIATE PROFESSOR WILSON

EE 231. NUCLEAR ENGINEERING.—Review of nuclear physics; fission and the chain reaction; nuclear reactor principles; materials, instrumentation, and control of nuclear reactors; selected applications and techniques of nuclear engineering. Prerequisite: permission of instructor. 3 units. PROFESSOR MEIER

EE 259. ADVANCED ELECTRICAL ENERGY CONVERSION.—Advanced theory of rotating electric machines; direct and quadrature axis components; equivalent circuits; symmetrical components; transients in machine systems. Prerequisite: an advanced course in electric machinery and permission of instructor. 3 units.

PROFESSOR MEIER AND ASSOCIATE PROFESSOR WILSON

EE 265. ADVANCED TOPICS IN COMMUNICATIONS.—Special problems dealing in the design and application of devices and systems in communications engineering. Prerequisite: An advanced course in electronic networks. 3 units.

ASSOCIATE PROFESSOR OWEN

EE 297, 298. THESIS RESEARCH.—A student with the proper background may carry on research under direction of a member of the staff in one of the following fields: dielectric materials; magnetic materials; energy conversion; instrumentation; high voltage phenomena. Thesis credit only. 6 units.

ALL MEMBERS OF THE GRADUATE STAFF

MECHANICAL ENGINEERING

PROFESSOR MACDUFF, CHAIRMAN AND DIRECTOR OF GRADUATE STUDIES—142A ENGINEERING; PROFESSOR KENYON; ASSOCIATE PROFESSORS ELSEVIER, STEPHENSON, AND BOYLE

The Mechanical Engineering Department offers graduate work leading to the degree of Master of Science. It is intended that the work for this degree provide a broad basic foundation in the art of applying science to Mechanical Engineering

design and analysis. The major requirement of 12 units in Mechanical Engineering is normally met by taking courses ME 201 and ME 202, plus two other courses which are so selected as to provide background for the specialized thesis-research. The minor requirements of 12 outside the College of Enginering is normally met by Mathematics 285, 286, and Physics 213, 214.

A minimum prerequisite to the graduate courses in mechanical engineering is a basic knowledge of differential equations, undergraduate thermodynamic theory, kinematics, mechanics, and machine design.

ME 201. THEORETICAL AND APPLIED MECHANICS.—Introduction to the theory of elasticity, vibrations analysis, and hydrodynamics. (This course is the same as CE 201.) 3 units. PROFESSORS MACDUFF AND ROWE

ME 202. THEORETICAL THERMODYNAMICS.—Classical and modern concepts of the conversion of heat and work; the combined First and Second Law; thermo-electricity; super-critical pressure systems; reheat and regenerative processes; binary-vapor systems; introduction to unsteady systems. 3 units.

PROFESSOR KENYON AND ASSOCIATE PROFESSORS ELSEVIER AND STEPHENSON

ME 221. ANALYSIS OF INCOMPRESSIBLE AND COMPRESSIBLE FLUID FLOW.—Flow of incompressible and compressible fluids; boundary layer phenomena for viscous fluids; Mach number concept for sonic and subsonic flow; experimental methods. 3 units.* PROFESSOR KENYON AND ASSOCIATE PROFESSOR BOYLE

ME 222. ANALYSIS OF HEAT TRANSFER.—Heat transfer by conduction, convection, and radiation; lumped and distributed heat capacity, resistance, losses; steady and transient flow. 3 units.*

PROFESSOR KENYON AND ASSOCIATE PROFESSOR STEPHENSON

ME 231-232. SYSTEMS ENGINEERING.—Methods of obtaining parameters for strength, response, and stability studies of mechanical systems; impedance and operational means of analysis; mechanical and electronic analogs; nonlinear theories. 6 units. PROFESSOR MACDUFF

ME 280. NUCLEAR REACTOR POWER CYCLES.—Introduction to basic reactor principles and reactor types; consideration of thermodynamic cycles for nuclear reactors for stationary and mobile plants; analysis of fluid flow and heat transfer problems unique to reactors with development of methods of reactor safety techniques; metallurgical problems peculiar to reactor design. 3 units.*

PROFESSOR KENYON

ME 297, 298. THESIS RESEARCH.—A student with proper background may carry on research under the direction of the staff in one of the following fields: systems engineering; thermodynamics; heat transfer; and fluid flow. Thesis credit only. 6 units. ALL MEMBERS OF THE GRADUATE STAFF

ENGLISH

PROFESSOR TURNER, CHAIRMAN—325 ALLEN BUILDING; PROFESSOR BOYCE, DIRECTOR OF GRADUATE STUDIES—401 ALLEN BUILDING; PROFESSORS BEVINGTON, BRINKLEY, FENTON, FISHER, GOHDES, SANDERS, STEVENSON, AND WARD; ASSOCIATE PROFESSOR BRYANT; ASSISTANT PROFESSORS BUDD, FERGUSON, HENINGER AND SMITH

The department offers graduate work leading to the A.M. and Ph.D. degrees. A statement of the requirements for the Ph.D. degree may be obtained from the Director of Graduate Studies.

FOR SENIORS AND GRADUATES

203. CHAUCER.—Reading and interpretation of the minor poems, *Troilus*, and *The Canterbury Tales*. 3 units. PROFESSOR FISHER

207-208. HISTORY OF THE ENGLISH LANGUAGE.—A survey of the language from Old to Present English, taking into consideration developments in phonology, morphology, syntax, and vocabulary. 6 units. PROFESSOR FISHER

215, 216. ELIZABETHAN DRAMA.—Careful study of one or two major dramatists (Jonson or Beaumont and Fletcher) and extensive reading in the other writers (Heywood, Ford, Massinger, Marlowe, Middleton) with emphasis on the nature and qualities of their work in relation to its historical background. 6 units.

217. MILTON.—Milton's poetry and prose, with emphasis on the major poems. 3 units. (1960-61) PROFESSOR BRINKLEY

218. SPENSER.—A study of his works. 3 units. (Not 1960-61) ASSISTANT PROFESSOR HENINGER

219, 220. THE EIGHTEENTH CENTURY.—Swift, Pope, Defoe, Addison, Steele, and others are studied in the first semester; in the second, Gray, Johnson, Boswell, Collins, Goldsmith, the novelists, and other writers. 6 units. PROFESSOR BOYCE, ASSISTANT PROFESSOR FERGUSON

221, 222. ENGLISH LITERATURE OF THE EARLY NINETEENTH CENTURY.—The Romantic poets and prose writers from Scott to the early Carlyle, with special attention to Wordsworth, Coleridge, and Keats. 6 units. PROFESSORS SANDERS, STEVENSON

223, 224. ENGLISH LITERATURE OF THE LATER NINETEENTH CENTURY.—The first semester is devoted chiefly to Carlyle, Dickens, Thackeray, Tennyson, and Browning; the second semester to Arnold, Ruskin, Pater, George Eliot, Meredith, the Pre-Raphaelites, and Swinburne. 6 units. PROFESSORS BEVINGTON, SANDERS, STEVENSON

229, 230. AMERICAN LITERATURE, 1800-1865.—The writers emphasized in the first semester are Emerson, Thoreau, and Hawthorne; in the second semester, Poe and Melville. 6 units. PROFESSOR TURNER, ASSISTANT PROFESSOR BUDD

233, 234. AMERICAN LITERATURE, 1865-1920.—Selected works of representative authors of the period. The first semester will include Whitman, Lanier, Mark Twain, James, Howells, Emily Dickinson, Henry Adams, and the Local Colorists; the second semester, Crane, Norris, Moody, London, Dreiser, Edith Wharton, Willa Cather, O'Neill, Robinson, and Frost. The lectures will deal primarily with literary trends as shaped by the social background. 6 units. PROFESSORS FENTON, GOHDES

235, 236. AMERICAN LITERATURE SINCE 1920.—The first semester will include Sherwood Anderson, Mencken, Lewis, Lardner, Gertrude Stein, Pound, Eliot, E. E. Cummings, Hemingway, Faulkner, and Fitzgerald; the second semester, Dos Passos, Farrell, Steinbeck, Wolfe, MacLeish, Stephen Vincent Benet, Richard Wright, and more recent writers. 6 units. PROFESSOR FENTON

237. ENGLISH DRAMA, 1642-1800.—The heroic play and the comedy of manners of the Restoration; the important plays, serious and comic, of the eighteenth century. 3 units. (Not 1960-61) PROFESSOR WARD

239. SHAKESPEARE.—The plays and poems. 3 units. ASSOCIATE PROFESSOR BRYANT

251, 252. ENGLISH LITERATURE OF THE SEVENTEENTH CENTURY.—Major works in prose, poetry, and drama from 1600 to the death of Dryden. 6 units. PROFESSOR WARD

262. ENGLISH LITERATURE OF THE EARLY TWENTIETH CENTURY.—Representative work of leading writers from 1900 to 1930, in fiction, drama, poetry, and essay. Critical analysis of selected specimens, and discussion of types, themes, and trends. 3 units. (1960-61) ASSISTANT PROFESSOR SMITH

269, 270. SOUTHERN LITERATURE.—The principal authors and the chief literary development from the beginning to the present. Emphasis in the first semester is on Byrd, Kennedy, Simms, Poe, Timrod, and the humorists; in the second on Lanier, Harris, Cable, Mark Twain, Ellen Glasgow, and Faulkner. Attention is given to the historical and cultural background and to literary relations extending outside the region. 6 units. (Not 1960-61) PROFESSOR TURNER

274. AMERICAN HUMOR.—The development of the native tradition in the Down-East humorists and the humorists of the Old Southwest. Extensive reading in Mark Twain and his contemporaries, and some attention to the continuation of the tradition after Mark Twain. 3 units. (Not 1960-61) PROFESSOR TURNER

FOR GRADUATES

304. STUDIES IN THE METAPHYSICAL POETS.—A careful study of Donne, Herbert, and Vaughan against the seventeenth century background, with some attention to their influence on other writers in the period and their impact on twentieth-century poetry. 3 units. (Not 1960-61) PROFESSOR BRINKLEY

311. BEOWULF.—Reading and interpretation of the text. 3 units. (Not 1960-61) PROFESSOR FISHER

315. FOURTEENTH-CENTURY ENGLISH LITERATURE.—Reading and intepretation of the texts of the literature from 1300 to 1400, exclusive of Chaucer. Emphasis on Wyclif, Gower, the *Pearl* Poet, *Piers Plowman*. 3 units. (1960-61) PROFESSOR FISHER

316. FIFTEENTH-CENTURY ENGLISH LITERATURE.—Reading and interpretation of the texts of the literature from 1400 to 1500, especially Lydgate, the Scottish Chaucerians, Malory, the Middle English drama, carols. 3 units. (Not 1960-61) PROFESSOR FISHER

331. EMERSON.—A study of Emerson's ideas as reflected in selected examples of his essays and poems. 3 units. (1960-61) PROFESSOR GOHDES

332. WHITMAN.—A detailed study of *Leaves of Grass* and of selected prose works. 3 units. (Not 1960-61) PROFESSOR GOHDES

333. HAWTHORNE AND MELVILLE.—Extensive reading in the works of Hawthorne and Melville, and close study of selected writings. 3 units. (1960-61) PROFESSOR TURNER

345. THE EIGHTEENTH-CENTURY NOVEL.—Richardson, Fielding, Smollett, and Sterne are emphasized. Attention is given to earlier prose fiction and to other contributing literary patterns. 3 units. (1960-61) PROFESSOR BOYCE

347. STUDIES IN VICTORIAN POETRY.—Analysis of themes, forms, and sources in the works of Tennyson, Browning, Arnold, Rossetti, Swinburne, Meredith, Hardy, and Hopkins. 3 units. (Not 1960-61) PROFESSOR STEVENSON

348. STUDIES IN VICTORIAN FICTION.—Techniques and principal types of material in the novels of Dickens, Thackeray, Trollope, Eliot, Meredith, and Hardy. 3 units. (Not 1960-61) PROFESSOR STEVENSON

351, 352. INTRODUCTION TO RESEARCH.—6 units.
ALL MEMBERS OF GRADUATE STAFF

378. SEMINAR: Samuel Johnson's Literary Criticism and Related Topics. 3 units. (Not 1960-61) PROFESSOR BOYCE

FORESTRY

PROFESSOR HARRAR, CHAIRMAN AND DIRECTOR OF GRADUATE STUDIES—308 SOCIAL SCIENCE BUILDING; PROFESSORS ANDERSON, KRAMER, NAYLOR AND SCHUMACHER; ASSOCIATE PROFESSORS RALSTON AND YOHO; ASSISTANT PROFESSORS JOHNSON, SULLIVAN AND WOODS

Major and minor work is offered in the scientific aspects of forestry leading to the Master of Arts and Doctor of Philosophy degrees. Work for these degrees may be pursued only in forest-tree physiology, wood anatomy and properties, forest pathology, silvics, forest soils, forest mensuration, forest entomology, and forest economics. College graduates who have had specialized training in botany or soil science and in allied basic subjects, such as physics, chemistry, geology, and zoology, may pursue graduate study and research only in the specialized fields for which their previous work has qualified them. Students who do not have previous training in forestry will be required to complete a minimum of thirty semester hours of approved work in forestry as a preliminary requirement to advanced study for the A.M. and Ph.D. degrees. The holders of these degrees will not be regarded as professionally trained foresters. For information on professional training in forestry, see *Bulletin of the School of Forestry*. For detailed information concerning admission to the Graduate School and for regulations governing candidacy for the A.M.

and Ph.D. degrees and for other regulations, consult the proper pages in this *Bulletin*.

FOR SENIORS AND GRADUATES

223. FOREST PATHOLOGY.—Infectious and non-infectious diseases of forest trees, and related deterioration of forest products. Field and laboratory study of symptoms, etiology, and control. Prerequisites: Botany 1 and 2, or equivalent. 3 units. ASSISTANT PROFESSOR JOHNSON

231. FOREST ENTOMOLOGY.—Morphology, general classification, life histories, and control of insects injurious to forest trees, logs, and lumber. 3 units.
PROFESSOR ANDERSON

241. DENDROLOGY.—Nomenclature, classification, and identification of woody plants with special reference to species indigenous to southeastern United States and other important forest regions of temperate North America. Laboratory and field work. Prerequisite: one year of biology. 3 units. PROFESSOR HARRAR

243. SILVICS.—Ecological foundations of silviculture with special reference to forest site factors; influence of forests on their environment; growth and development of trees and stands; origin, development, and classification of forest communities; methods of studying forest environments. Desirable prerequisites: plant physiology, plant ecology, and Forestry 261, or equivalent. 3 units.
ASSISTANT PROFESSOR WOODS

251. SAMPLING METHODS IN FORESTRY.—Statistical background for solution of sampling problems with special reference to sample inventory of a forest property. Offered both semesters. Prerequisite: Forestry S151. 3 units.
PROFESSOR SCHUMACHER

257. DESIGN OF FORESTRY EXPERIMENTS AND ANALYSIS OF DATA.—Role of experimental design in field and laboratory, and statistical analysis of data as aspects of scientific method in forest research. 5 units. PROFESSOR SCHUMACHER

261. FOREST SOILS.—Origin, development, and classification of soils with special emphasis on those developed in humid climates; morphological, physical, and chemical properties of soils in relation to growth of trees; effect of forests on soils. Prerequisites: Chemistry 1 and 2, and Physics 1, or equivalents; physical geology, mineralogy, petrology, and analytical chemistry are also desirable. 3 units.
ASSOCIATE PROFESSOR RALSTON

271. ECONOMICS OF FORESTRY.—Principles of economics used in the analysis of factors affecting the supply of forest products, pricing of stumpage and primary forest products, factors affecting the demand for forest products, economic characteristics and problems of the major forest products industries, analysis of such specific private forestry problems as marketing, forest ownership pattern, taxation, credit, risk, and economic fluctuations. Prerequisite: at least one course in the principles of economics. 3 units. ASSOCIATE PROFESSOR YOHO

276. FORESTRY POLICY.—Objective study and analysis of the development of public land and forestry policies in the United States, present policies of public and private forestry organizations, and current policy issues in the light of economic and other criteria. 2 units. ASSOCIATE PROFESSOR YOHO

290. WOOD ANATOMY.—Study of the physical features and the gross and minute structural characteristics of wood leading to the identification of the commercial woods of the United States, and the important tropical woods used in American wood-working industries. Elementary microtechnique. Prerequisite: one year of biology, Forestry 241 or equivalent. 3 units. PROFESSOR HARRAR

FOR GRADUATES

352. ANALYSES OF FOREST MEASUREMENTS.—Empirical equation and curve fitting appropriate for construction of timber yield tables, tree volume and taper tables; significance tests and graphical solution of equations. Assignments require operation of calculating machines. Prerequisite: Forestry 251. 3 units.
PROFESSOR SCHUMACHER

357, 358. RESEARCH IN FORESTRY.—Credits to be arranged. Students who have had adequate training may do research under direction of members of the Faculty in the following branches of forestry:

a. SILVICS.—Prerequisites: Forestry 241, 243, and 244, or equivalents.
ASSISTANT PROFESSOR WOODS

b. FOREST SOILS.—Prerequisite: Forestry 261 or equivalent.
ASSOCIATE PROFESSOR RALSTON

e. FOREST ECONOMICS.—Prerequisite: Forestry 277 or equivalent.
ASSOCIATE PROFESSOR YOHO

f. PROPERTIES OF WOOD.—Prerequisites: Forestry 259 and 260, or equivalents. PROFESSOR HARRAR, AND ASSISTANT PROFESSOR SULLIVAN

g. FOREST MENSURATION.—Prerequisites: Forestry S151, 251, and 352, or equivalents. PROFESSOR SCHUMACHER

h. FOREST ENTOMOLOGY.—Prerequisite: Forestry 230 or equivalent.
PROFESSOR ANDERSON

k. PHYSIOLOGY OF FOREST TREES.—Prerequisites: Plant physiology and plant ecology or silvics. PROFESSOR KRAMER

l. FOREST PATHOLOGY.—Prerequisites: Plant physiology and Forestry 223 or equivalent. ASSISTANT PROFESSOR JOHNSON

362. FOREST SOIL PHYSICS.—Analysis of the physical properties of soil related to the significance of soil moisture, temperature, aeration, and structural characteristics in the analysis of forest growth relationships. Prerequisite: Forestry 261. 3 units. (1960-61) ASSOCIATE PROFESSOR RALSTON

366. FOREST SOIL FERTILITY.—The relationships of soil fertility factors in the growth of forest trees. Emphasis is placed on the analysis of soil factors related to the mineral nutrition of trees. Prerequisites: Forestry 261 with analytical chemistry recommended. 3 units. (Not 1960-61) ASSOCIATE PROFESSOR RALSTON

378. SEMINAR IN FOREST ECONOMICS.—Examination and discussion of the application of economic concepts in forestry, the potential contribution of economic analysis to private and public forest management; current research in forest economics. Prerequisite: Forestry 270 or equivalent; courses in economic theory are desirable. 2 units. ASSOCIATE PROFESSOR YOHO

396. CHEMISTRY OF WOOD.—A study of the chemical constituents of wood including cellulose and its derivatives, lignin and the lignin-cellulose bond, the hemicelluloses, and the extractives; hydrogenation and hydrolysis of wood; cell wall chemistry. Prerequisites: Forestry 290 or equivalent, one course in college physics; organic chemistry desirable. 2 s.h. (w) ASSISTANT PROFESSOR SULLIVAN

397. TIMBER PHYSICS.—The physical properties of wood in relation to electricity, heat, light, moisture, and sound; the mechanical properties of wood; influence of site, growth, and anatomy upon strength and quality of wood; standard timber testing procedures. Prerequisites: Forestry 290 or equivalent, one course in college physics, mathematics through calculus desirable. 2 s.h. (w)
ASSISTANT PROFESSOR SULLIVAN

GERMANIC LANGUAGES AND LITERATURE

PROFESSOR SALINGER, CHAIRMAN AND DIRECTOR OF GRADUATE STUDIES—301C GRAY; ASSOCIATE PROFESSOR SCHOOLFIELD; ASSISTANT PROFESSOR BEARE

The Department of German offers graduate work leading to the A.M. degree. Students who expect to major in German should have had sufficient undergraduate courses in Germanic languages to enable them to proceed to more advanced work.

Students who wish to take courses in German for a minor should normally have completed a third-year course (in exceptional cases, a second-year) of college German with acceptable grades.

201, 202. GOETHE.—A study of his life and works, in the light of his lasting significance to world literature. 6 units. (1960-61) PROFESSOR SALINGER

203, 204. EIGHTEENTH CENTURY.—Eighteenth-century German literature in its relation to contemporary European philosophy. 6 units.*
PROFESSOR SALINGER

205, 206. MIDDLE HIGH GERMAN.—The language and literature of Germany's first classical period. 6 units.*

207, 208. GERMAN ROMANTICISM.—The course covers the entire field of German Romanticism from 1800 to 1850. 6 units. (Not 1960-61)
ASSOCIATE PROFESSOR SCHOOLFIELD

209, 210. KLEIST, GRILLPARZER, AND HEBBEL.—The development of the drama in Germany and Austria between Schiller and naturalism. 6 units. (Not 1960-61)
PROFESSOR SALINGER

211, 212. HEINRICH HEINE.—A study of the German poet and his immediate successors in the movement known as *Jungdeutschland*. 6 units. (Not 1960-61)
PROFESSOR SALINGER

213. LITERATURE OF THE EMPIRES, 1866-1918.—German and Austrian authors of the period with emphasis on Raabe, Fontane, von Saar, Hauptmann, the early works of Thomas and Heinrich Mann, the early Hesse and Rilke. 3 units.
ASSOCIATE PROFESSOR SCHOOLFIELD

214. GERMAN LITERATURE SINCE 1918.—Special emphasis on Thomas Mann, Broch, Doderer and the novel since 1920, the drama from Hofmannsthal to Brecht, the poetry of George, the later Rilke and Benn. 3 units.
ASSOCIATE PROFESSOR SCHOOLFIELD

215. SEVENTEENTH-CENTURY LITERATURE.—A study of the leading writers of the Baroque, seen against the background of their time. 3 units.
ASSISTANT PROFESSOR BEARE

——. GRADUATE READING COURSE. An intensive course in German to develop rapidly the ability to read German in several fields. Graduate students only. No credit.

RELATED COURSES IN OTHER DEPARTMENTS

The following courses in other departments are recommended to students who are majoring in Germanics, as particularly valuable in building a proper background for Germanic studies:

(a) Graduate courses in literature or philology, offered by the ancient and modern language departments, to be selected after consultation with the Germanic Department.

(b) Graduate courses in history and philosophy, offered by those departments, to be selected after consultation with the Germanic Department.

HISTORY

PROFESSOR ALDEN, CHAIRMAN—235 ALLEN; PROFESSOR PARKER, DIRECTOR OF GRADUATE STUDIES—232 ALLEN; PROFESSORS CLYDE, CURTISS, HAMILTON, LANNING, MANCHESTER, ROPP, AND WOODY; ASSOCIATE PROFESSORS ACOMB, COLTON, FERGUSON, HOLLEY, NELSON, AND WATSON; ASSISTANT PROFESSOR DURDEN

A student who intends to work for an A.M. degree in history must present a total of eighteen semester hours of credit for undergraduate courses in history, of which six hours must be in American history if he plans to take his major in that field.

A candidate for the degree of Doctor of Philosophy in history is required to prepare himself in four fields of history, one of which must be in American history and another in the history of Western Europe. The choice and delimitation of fields is determined in consultation with his supervisor and the Director of Graduate Studies. The Department offers graduate instruction in the following fields; Western Europe; American history; Great Britain and the Commonwealth; Latin America; American foreign relations; the Far East in the modern period; Russia; military history.

Students may receive credit for either semester of a hyphenated course without taking the other semester if they obtain written permission from the instructor and the Director of Graduate Studies.

FOR SENIORS AND GRADUATES

203-204. THE UNITED STATES, 1850-1900.—The rise of sectionalism, secession, wartime problems of the Union and Confederacy, political and economic adjustments of Reconstruction, the status of the Negro, the New South, problems of capital and labor, the agrarian revolt, political parties and reform. 6 units. (Not 1960-61) PROFESSOR WOODY

209-210. CONSTITUTIONAL HISTORY OF THE UNITED STATES, 1760 TO THE PRESENT.—A study of the basic problems in forming the Constitution; of its development through the major crises in the history of the United States; of the effects of changing social, cultural, economic, and political conditions on the Constitution. 6 units.

212. RECENT INTERPRETATIONS OF UNITED STATES HISTORY.—A course designed to encourage a critical evaluation of major issues in United States history through examination of recent interpretations of key problems. 3 units. ASSOCIATE PROFESSOR WATSON

213-214. THE OLD SOUTH.—Political thought and party trends from Jefferson to Calhoun; agriculture, slavery, expansion; commerce, manufacturing, transportation; urban life, religion, education; the rise of Southern nationalism. 6 units. (Not 1960-61) PROFESSOR WOODY

215-216. FOREIGN POLICY AND DIPLOMACY OF THE UNITED STATES.—The work in the first semester, covering the period 1775-1877, deals with such topics as the origins and evolution of basic foreign policies; isolation from Europe; paramount interests in Latin America, including the Monroe Doctrine; international co-operation in the Far East. The work in the second semester, covering the period since 1877, deals with such topics as the rise of the new Manifest Destiny; beginnings of American imperialism in Latin America and the Far East; the failure of traditional neutrality in the first World War; postwar conflicts between isolation and collective security; involvement in the second World War. 6 units. (Not 1960-61) PROFESSOR CLYDE

217, 218. EUROPE SINCE 1870.—International relations since the Franco-German War is the chief subject of study in this course; special emphasis is placed upon the underlying economic and political influences. 6 units.

221-222. THE AGE OF THE RENAISSANCE.—The decline of characteristic features of medieval civilization and the rise of modern European institutions with particular attention to intellectual movements from Dante to Erasmus. 6 units. (1960-61) ASSOCIATE PROFESSOR NELSON

223-224. THE OLD REGIME AND THE FRENCH REVOLUTION, 1661-1815. A Study of social, political, and intellectual revolutions in continental Europe, centering on France and giving special attention to successive interpretations of historical change. 6 units. ASSOCIATE PROFESSOR ACOMB

225-226. THE AGE OF THE REFORMATION.—A survey of European civilization from 1500 through the Peace of Westphalia. 6 units. (Not 1960-61) ASSOCIATE PROFESSOR NELSON

227, 228. EUROPE IN THE NINETEENTH CENTURY.—A study, beginning with the career of Napoleon Bonaparte, of the forces and personalities influential in the nineteenth century. Emphasis in the first semester is on the problems of the biographer; in the second, on those of a student of national communities. 6 units. (Not 1960-61) PROFESSOR PARKER

229. RECENT INTERPRETATIONS OF MODERN EUROPERN HISTORY.—A course designed to develop the ability to appraise critical historical issues through the study and discussion of recent interpretations of key historical problems in Modern European History. 3 units. PROFESSOR PARKER

231-232. THE HISPANIC COLONIES AND REPUBLICS IN AMERICA.—The development of the Iberian states as colonizing powers, the conquest of America, the Spanish treatment of the Indian, the contest between Spain and other European nations over America, the independence movement, the struggle for stable government, the rise of liberalism with special emphasis upon Mexico from the Revolution of 1910 to the present, and basic inter-American developments. 6 units. (1960-61)
PROFESSOR LANNING

233-234. THE INSTITUTIONAL, CULTURAL, AND SOCIAL HISTORY OF HISPANIC AMERICA.—The first semester of this course deals with subject races, the development of mixed breeds, the governmental system, the Church and the Inquisition, and Spanish culture with emphasis upon university subjects. In the second semester the work deals with the political ideas of the wars of independence, revolution and dictatorship, the rise of public education, public health, land reform, and proletarian movements. 6 units. (Not 1960-61) PROFESSOR LANNING

235, 236. EUROPEAN EXPANSION OVERSEAS.—In the first semester attention is given to the age of discovery and to the origin and development of the great European overseas empires with special emphasis on the role of the Portuguese in India and the Americas. The work of the second semester deals with the decline of the mercantile empires, the emergence of independent centers of European culture overseas (Brazil being taken as one example), and the revival of mercantile imperialism in the late nineteenth and the twentieth centuries. 6 units.
PROFESSOR MANCHESTER

241-242. THE FAR EAST.—The history of the Western impact on Eastern Asia in the 19th and 20th centuries. Emphasis is placed on such matters as commercial and colonial expansion, the opening of China and Japan, the development by the Western Powers and Japan of colonial, imperialistic, and nationalistic interests, and the rise of Communist power in Asia. 6 units. PROFESSOR CLYDE

243-244. THE UNITED STATES AND THE FAR EAST.—An historical analysis of American relations with the peoples of Eastern Asia during the 19th and 20th centuries. 6 units. PROFESSOR CLYDE

245-246. WAR IN THE MODERN WORLD.—This course is concerned with the relations between warfare and modern political, economic and social conditions. Special attention is given to the development of British and American military methods and to the events of the American Civil War and the two World Wars. The work in the first semester deals with Clausewitz's theories of warfare and the period from the introduction of gunpowder to 1871; in the second semester there is a more detailed analysis of recent land, sea, and air warfare. 6 units.
PROFESSOR ROPP

249-250. SOCIAL AND INTELLECTUAL HISTORY OF THE UNITED STATES.—Evolution of American society and thought to the present; lectures and class discussions seek to illuminate the interplay of ideas and social practice by the examination of attitudes and institutions in such fields as science and technology, law, learning, and religion. 6 units. ASSOCIATE PROFESSOR HOLLEY

251-252. RECENT EUROPEAN HISTORY.—A history of the political and economic developments in Europe since 1870. 6 units. ASSOCIATE PROFESSOR COLTON

257. SOCIAL AND CULTURAL HISTORY OF THE HELLENISTIC WORLD FROM ALEXANDER TO AUGUSTUS.—Lectures, readings, and discussions. This course will not be separately credited without the sequel, 258. 3 units.
PROFESSOR ROGERS

258. SOCIAL AND CULTURIAL HISTORY OF THE GRAECO-ROMAN WORLD.—The Roman Empire as the trustee of Hellenism and Christianity, and its own original contributions to modern civilization; lectures, readings, and discussions. This course continues 257 and will not be separately credited. 3 units.
PROFESSOR ROGERS

259-260. THE EMERGENCE OF THE NEW SOUTH, 1865 TO THE PRESENT.—Reconstruction, industrialization, and agrarian revolt; changing status of

the Negro; the South's role in the reform movements headed by Theodore Roosevelt, Woodrow Wilson, and Franklin D. Roosevelt. 6 units.
ASSISTANT PROFESSOR DURDEN

261-262. RUSSIA IN THE TWENTIETH CENTURY.—A study of the background of the Revolution of 1917 followed by an analysis of the history and policies of the Soviet state. 6 units. PROFESSOR CURTISS

263-264. AMERICAN COLONIAL HISTORY AND THE REVOLUTION, 1607-1789.—The founding and institutional development of the English colonies: the background, progress, and results of the Revolution. 6 units. PROFESSOR ALDEN

267, 268. ENGLAND FROM EDWARD III TO ANNE.—The transition from medieval to modern England, the English Renaissance, and the political, social, and intellectual problems of the seventeenth century. 6 units.
ASSOCIATE PROFESSOR FERGUSON

269. BRITISH HISTORY FROM 1714 to 1867.—The interrelationship of the leadership of such men as Walpole, Chatham, Pitt, and Peel with war, revolution, and social institutions; the rise of the cabinet system; the Industrial Revolution; imperial changes; and reform. 3 units. PROFESSOR HAMILTON

270. GREAT BRITAIN AND THE COMMONWEALTH OF NATIONS, 1867 TO THE PRESENT.—A history of Great Britain at the height of her world dominance and beyond, her oceanic empire, and the evolution of that empire into a unique world-wide Commonwealth of Nations. 3 units. PROFESSOR HAMILTON

FOR GRADUATES

303-304. THE UNITED STATES IN THE TWENTIETH CENTURY.—The emergence of the United States as a major power; attention is focused on domestic developments and conflicting theories of expansion and federal power. Emphasis in the first semester is on the progressive era and the first World War; the second semester is devoted to the twenties and to the Franklin Roosevelt administration. 6 units. ASSOCIATE PROFESSOR WATSON

305-306. SEMINAR IN THE HISTORY OF ENGLAND AND THE BRITISH EMPIRE.—The work consists of practical training in the methods of historical research based on sources for modern British history. 6 units. PROFESSOR HAMILTON

309-310. SEMINAR IN AMERICAN COLONIAL AND REVOLUTIONARY HISTORY.—6 units. PROFESSOR ALDEN

315-316. SEMINAR IN SOUTHERN HISTORY.—Year course. 6 units. (Not 1960-61) PROFESSOR WOODY

317-318. SEMINAR IN MODERN EUROPEAN HISTORY.— 6 units.
ASSOCIATE PROFESSOR COLTON

321-322. SEMINAR IN THE HISTORY OF SPAIN, HISPANIC AMERICA, AND INTER-AMERICAN RELATIONS.—6 units. PROFESSOR LANNING

343-344. SEMINAR IN THE HISTORY OF AMERICAN FOREIGN RELATIONS AND THE FAR EAST.—Particular attention is given to a critical examination of the bibliography of the field. 6 units. PROFESSOR CLYDE

401. SEMINAR ON THE BRITISH COMMONWEALTH.—3 units.
PROFESSORS COLE, HAMILTON, AND SPENGLER

HISTORIOGRAPHY AND THE TEACHING OF HISTORY

FOR GRADUATES

312. SEMINAR IN THE TEACHING OF HISTORY IN COLLEGE.—The work in this course is intended to acquaint students with the problems involved in teaching history in college. It includes critical observation of the teaching by members of the History staff in Duke University. Year course. 2 units.
PROFESSORS MANCHESTER AND HAMILTON

This course is required of all candidates for the degree of Doctor of Philosophy who are in residence as many as two years at Duke University.

320. HISTORIOGRAPHY.—A critical study of the process of finding, appraising, and interpreting the sources of history and of the presentation of the results in narrative. Works of important historians from Herodotus to the present are analyzed. The student undertakes specific exercises in research, criticism, and narration. There is consideration of such general topics as schools, theories, philosophies, and the function of history. Year course. 4 units.

ASSOCIATE PROFESSOR NELSON

This course is required of all candidates for the degree of Doctor of Philosophy who are in residence as many as two years at Duke University.

MATHEMATICS

PROFESSOR GERGEN, CHAIRMAN—134 PHYSICS BUILDING; PROFESSOR ROBERTS, DIRECTOR OF GRADUATE STUDIES—230 PHYSICS BUILDING; PROFESSORS CARLITZ, DRESSEL, ELLIOTT, AND THOMAS; VISITING PROFESSOR SNEDDON; ASSISTANT PROFESSORS GALLIE, MCLEOD, SHOENFIELD, AND WARNER; VISITING ASSISTANT PROFESSOR SCHMIDT

Graduate work in the Department of Mathematics is offered leading to the A.M. and Ph.D. degrees. The student, in his undergraduate work, must have had courses in differential and integral calculus, and at least 6 semester hours of other courses in mathematics on the junior or senior level.

The A.M. degree with a major in mathematics is awarded primarily on the basis of scholarship. Of the 24 units of course work required for this degree, 18 units must be taken in the Department of Mathematics.

The Ph.D. degree in mathematics is awarded upon the demonstration of ability and training in research. The original dissertation, therefore, becomes the most important of the formal requirements for this degree.

Because of the important literature of mathematics written in German and French, the student must have a practical reading knowledge of these languages near the beginning of his graduate study.

FOR SENIORS AND GRADUATES

205. ALGEBRA FROM AN ADVANCED STANDPOINT.—This course is designed for teachers of secondary school mathematics. Topics considered are real and complex numbers, elementary number theory, scales of notation, Diophantine problems, continued fractions, summation of series, binomial theorem, interest and annuities. 3 units. (Retired Officers Program only.) PROFESSOR THOMAS

206. PLANE GEOMETRY AND TRIGONOMETRY FROM AN ADVANCED STANDPOINT.—Postulates for Euclidean geometry, duality, non-Euclidean geometries, geometric rigor, theory of linear and angular measuresments, accuracy of logarithmic tables and calculations, nomograms and other computing aids. 3 units. (Retired Officers Program only.) PROFESSOR THOMAS

211. FINITE MATHEMATICS.—Compound statements, sets and subsets, partitions and counting, probability theory, vectors and matrices, linear programming and the theory of games, applications to behavioral science problems. 3 units. (Retired Officers Program only.) PROFESSOR GERGEN

212. MATHEMATICAL ANALYSIS.—Elements in the theory of functions, principally for real variables. Sequences and series, continuity, differentiation, integration. 3 units. (Retired Officers Program only.) PROFESSOR GERGEN

213-214. MODERN ALGEBRA.—Construction of number systems. Introduction to groups, rings, fields, vector spaces, linear transformations, matrices, determinants, systems of linear equations. Polynomials with real coefficients. Galois theory with applications to classical problems. 6 units. ASSISTANT PROFESSOR SHOENFIELD

221. DIGITAL COMPUTER.—History of computers; number representation, information storage, logical arithmetic; components and organization of computing systems; coding and programming; programmed arithmetics, function and functional

subroutines, interpretive routines, compilers; error analysis. Two lectures, one laboratory. 3 units. ASSISTANT PROFESSOR GALLIE

222. INTRODUCTION TO NUMERICAL ANALYSIS.—Error analysis; real and complex roots of equations; finite difference methods and theory of interpolation; numerical differentiation and integration; numerical integration of ordinary and partial differential equations; simultaneous equations and matrix inversion. Two lectures, one laboratory. Prerequisite: Mathematics 221. 3 units.
ASSISTANT PROFESSOR GALLIE

227 228. THEORY OF NUMBERS.—Congruences, arithmetic functions, compound moduli, quadratic reciprocity, Gauss sums, quadratic forms, sums of squares. Prerequisite: calculus. 6 units. (1960-61) PROFESSOR CARLITZ

229-230. ALGEBRAIC NUMBERS.—Ideals, unique factorization, divisors of the discriminant, determination of the class number. Prerequisite: theory of equations. 6 units. (Not 1960-61) PROFESSOR CARLITZ

235-236. ABSTRACT ALGEBRA.—Groups, fields, rings, matrices, quadratic and bilinear forms, general Galois theory, hypercomplex systems. Prerequisite: calculus. 6 units. PROFESSOR CARLITZ

247-248. ARITHMETIC OF POLYNOMIALS.—Field theory, detailed study of finite fields, special polynomials and functions, valuation theory, the zeta function. Prerequisite: Mathematics 235 or consent of the instructor. 6 units.*
PROFESSOR CARLITZ

253-254. DIFFERENTIAL GEOMETRY.—Curves and surfaces in three-dimensional Euclidean space, applicability, differential parameters, Riemannian geometry of n-space. Prerequisite: calculus. 6 units.* PROFESSOR THOMAS

271-272. INTRODUCTORY TOPOLOGY.—Topological properties of Euclidean spaces, set-theoretic and combinatorial methods. Prerequisite: calculus. 6 units.
ASSISTANT PROFESSOR SHOENFIELD

285. MATHEMATICAL ANALYSIS FOR CHEMISTS AND PHYSICISTS—Vectors, line and surface integrals, tensors, complex variables, differential and integral equations. Prerequisite: Mathematics 53. 3 units. PROFESSOR DRESSEL

286. MATHEMATICAL ANALYSIS FOR CHEMISTS AND PHYSICISTS.—Wave equation, Fourier series, heat equations, telegraphic equation, Legendre polynomials. Bessel functions, Schrödinger's equation. Prerequisite: Mathematics 53. 3 units. PROFESSOR DRESSEL

287-288. FOUNDATIONS OF MATHEMATICS.—Propositional calculus, predicate calculus, axiomatized number theory. Gödel completeness and incompleteness theorems. Recursive functions; hierarchies; constructive ordinals. Set theory; consistency of the axiom of choice. Prerequisite: Mathematics 52, or consent of the instructor. 6 units. (Not 1960-61) ASSISTANT PROFESSOR SHOENFIELD

291-292. THEORY OF FUNCTIONS.—Limits, implicit functions, power series, double series, Cauchy's theorem and its applications, residues, Riemann surfaces, conformal mapping. Prerequisite: calculus. 6 units. PROFESSOR GERGEN

FOR GRADUATES

325-326. REAL VARIABLE.—Number system, Lebesgue and Stieltjes integrals, topics in Fourier series. Prerequisite: Mathematics 291-292. 6 units. (1960-61)
ASSISTANT PROFESSOR MCLEOD

327-328. PARTIAL DIFFERENTIAL EQUATIONS.—Boundary and initial value problems: existence, uniqueness, and stability theorems, generalized solutions, Hilbert space methods, problems with approximate and improper data, numerical methods. Prerequisite: Math. 291-292 or consent of the instructor. 6 units.*
ASSISTANT PROFESSOR GALLIE

333-334. ANALYTIC THEORY OF NUMBERS.—Distribution of primes, primes in an arithmetic progression, Waring and Goldbach problems, applications of elliptic functions. Prerequisite: Mathematics 291-292. 6 units.* PROFESSOR CARLITZ

337-338. EXISTENCE THEOREMS.—Systems of partial differential equations, Pfaffian systems, theorems of Cauchy, Riquier, and Cartan, singular integral varieties. Prerequisite: Mathematics 291-292. 6 units.* PROFESSOR THOMAS

343-344. ORDINARY DIFFERENTIAL EQUATIONS.—Solution by separation of variables, exact differentials, integrating factors, solution in series. Cauchy's existence theorem, linear differential systems, singular points, partial differential equations equivalent to ordinary systems. Prerequisite: Mathematics 291-292. 6 units.* PROFESSOR THOMAS

371-372. DIMENSION THEORY.—Abstract spaces, separation theory for Euclidean spaces, dimension theory. Prerequisite: Mathematics 271-272. 6 units.* PROFESSOR ROBERTS

395-396. TOPOLOGICAL ALGEBRA.—Banach, Hilbert, and locally convex spaces: theorems of Banach, Hahn-Banach, Banach-Steinhaus, Krein-Milman, Mackey; introduction to L. Schwartz's theory of distributions. Banach algebras: the Gelfand theory, Silov's ideal theory, introduction to harmonic analysis on groups with applications to Fourier analysis; operator algebras. Prerequisite: Mathematics 236 and 292, or consent of the instructor. 6 units. (1960-61) ASSISTANT PROFESSOR WARNER

MICROBIOLOGY

PROFESSOR NORMAN F. CONANT, DIRECTOR OF GRADUATE STUDIES—321 BELL; PROFESSORS BEARD, LARSH AND D. T. SMITH; ASSOCIATE PROFESSORS OVERMAN, RUNDLES, WILLETT; ASSISTANT PROFESSOR PINE

(See MEDICAL SCHOOL, p. 98)

M221. BACTERIOLOGY AND IMMUNOLOGY.—This course is devoted primarily to the study of the biological and immunological relationships of microorganisms (bacteria, fungi, Rickettsia, and viruses) in disease. It is not a course in bacteriologic technique. An additional course in technical methods is provided for those who require it. Five lectures, two 1-hour conferences, and three laboratory periods of 3 hours each weekly, in fall quarter. Prerequisites: courses in general zoology, general botany, histology and comparative anatomy, general and organic chemistry. 6 units. PROFESSORS CONANT, D. T. SMITH; ASSOCIATE PROFESSORS OVERMAN, WILLETT; ASSISTANT PROFESSORS OSTEROUT AND PINE

M323. ADVANCED BACTERIOLOGY AND IMMUNOLOGY.—This course is intended primarily for graduate students majoring in bacteriology, but it is also available as a minor to other graduate students in related fields, to whom it is recommended by respective supervising committees and with the approval of the Department of Bacteriology. Prerequisites: Bacteriology and Immunology, M221. 4 units per semester. PROFESSOR D. T. SMITH

M324. RESEARCH SEMINAR ON VIRUSES.—Limited to advanced students. 2 units per semester. PROFESSOR BEARD

M325. MEDICAL MYCOLOGY.—This course is intended to familiarize the graduate student majoring in mycology with the fungi causing disease in man and animals. The course includes practical laboratory work with materials from patients in Duke Hospital and those sent to the Duke Fungus Registry from outside sources. Prerequisites: A.M. in botany with major in mycology and M221. Course limited to four students each year. 4 units per semester. PROFESSOR CONANT

M291. MEDICAL PARASITOLOGY.—One lecture and one three-hour laboratory period per week for eleven weeks during the fall quarter. Prerequisites: courses in Zoology 204, general botany, histology and comparative anatomy. 1 unit. PROFESSORS CONANT AND LARSH

M211. HEMATOLOGY.—Three lectures and three laboratory periods of 3 hours each, weekly, for eleven weeks in the spring quarter. Prerequisites: courses in general zoology, general botany, histology and comparative anatomy. 4 units. ASSOCIATE PROFESSOR RUNDLES

M326-327. SEMINAR.—Graduate students and staff meet weekly to discuss and review recent microbiological literature. Required of all graduate students who are candidates for the A.M. or Ph.D. degree. 2 units.
PROFESSORS CONANT AND SMITH; ASSOCIATE PROFESSORS GRESS, OVERMAN, AND WILLETT; ASSISTANT PROFESSORS OSTERHOUT AND PINE

PHILOSOPHY

PROFESSOR BAYLIS, CHAIRMAN—212B WEST DUKE BUILDING; ASSOCIATE PROFESSOR PEACH, DIRECTOR OF GRADUATE STUDIES—212A WEST DUKE BUILDING; PROFESSOR NEGLEY; ASSOCIATE PROFESSORS CLARK AND WELSH; ASSISTANT PROFESSOR WILSON

The Department of Philosophy offers graduate work leading to the A.M. and Ph.D. degrees. Students may specialize in any of the following fields: the History of Philosophy; Logic; Philosophy of Science; Epistemology; Metaphysics; Philosophical Analysis; Ethics; Aesthetics; Political Philosophy; and Philosophy of Law.

Individual programs of study are developed for each student. The following requirements, however, are fundamental: (1) In February of their first year new graduate students in philosophy who are not then taking the preliminary examinations for the Ph.D. are required to take qualifying examinations in the history of philosophy, ancient and modern on a central philosophical topic, and in logic, both classical and symbolic, unless they have taken and passed with a grade of E or G Philosophy 331c, Logic, in their first semester. A student's achievement on these examinations will be regarded as indicative of his ability to undertake advanced graduate work. (2) Preliminary examinations for the Ph.D., which may be taken only after a student has met the language requirements for that degree, should be passed during the first year of study beyond the A.M. degree. In these examinations students are expected to combine historical knowledge with critical understanding.

Work in a minor field outside of the Department, but not necessarily confined to any one department, must include six units for the A.M. and nine for the Ph.D. and may include more as a student's program requires or permits.

FOR SENIORS AND GRADUATES

202. PHILOSOPHY OF ART.—A study of some fundamental issues in aesthetics, with particular reference to the fields of literature, music, and painting. Problems discussed include: the nature and purposes of the arts; meaning in the arts: art and morality; the role of standards in art criticism; aesthetic judgment; interpretation and evaluation. 3 units. ASSOCIATE PROFESSOR WELSH

203. CONTEMPORARY ETHICAL THEORIES.—Critical discussion and evaluation of the ethical views of twentieth-century British and American philosophers. 3 units. (Not 1960-61) PROFESSOR BAYLIS

205. PHILOSOPHY OF HISTORY.—Discussion of the method, metaphysical implications, and influence of interpretations of history: Hegel, Marx, Spengler, Toynbee. 3 units. PROFESSOR NEGLEY

208. POLITICAL PHILOSOPHY.—Analysis of the structure of social organization with particular reference to the nature of political and legal institutions. 3 units. PROFESSOR NEGLEY

211. PLATO.—An examination of Plato's views with respect to knowledge, reality, and the state. 3 units.*

217. ARISTOTLE.—An analysis of Aristotle's views with respect to knowledge, reality, and the state. 3 units. (1960-61)

219. KANT.—Reading and discussion of his philosophy, with some attention to historical continuity. 3 units.* PROFESSOR NEGLEY

225. BRITISH EMPIRICISM.—A critical study of the writings of Locke, Berkeley and Hume, with special emphasis on problems in the theory of knowledge. 3 units. (Not 1960-61) ASSOCIATE PROFESSOR PEACH

227. CONTINENTAL RATIONALISM.—A critical study of the writings of Descartes, Spinoza, and Leibnitz, with special emphasis on problems in the theory of knowledge and metaphysics. 3 units. (1960-61) ASSOCIATE PROFESSOR PEACH

228. RECENT AND CONTEMPORARY PHILOSOPHY.—A critical study of outstanding philosophical views from Schopenhauer to the present. 3 units. ASSOCIATE PROFESSORS PEACH AND WELSH

229. AMERICAN PRAGMATISM.—Studies in the philosophy of Peirce, James, Dewey and Mead. 3 units.* ASSOCIATE PROFESSOR WELSH

232. SPECIAL PROBLEMS IN THE PHILOSOPHY OF SCIENCE.—Selected topics concerning the methods of the sciences and the philosophy of science. 3 units. (1960-61) ASSOCIATE PROFESSOR CLARK

241. LOGIC.—Fundamental Problems of Logic. 3 units. (Not 1960-61) ASSOCIATE PROFESSOR CLARK AND ASSISTANT PROFESSOR WILSON

250. PHILOSOPHICAL ANALYSIS.—A critical study of recent and contemporary essays in philosophical analysis, and an evaluation of the nature, methods, and results of this movement. 3 units. (1960-61) PROFESSOR BAYLIS AND ASSOCIATE PROFESSOR CLARK

252. METAPHYSICS.—A critical and evaluative study of rival metaphysical theories and their bases. Analysis of the fundamental metaphysical categories and of metaphysical methods. 3 units. (Not 1960-61) PROFESSOR BAYLIS

287-288. FOUNDATIONS OF MATHEMATICS.—Propositional calculus, predicate calculus, axiomatized number theory. Gödel completeness and incompleteness theorems. Recursive functions; hierarchies; constructive ordinals. Set theory; consistency of the axiom of choice. Prerequisite: Mathematics 53, or consent of instructor. 6 s.h. (Also listed as Mathematics 287-288.) ASSISTANT PROFESSOR SHOENFIELD

291, 292. CRITICAL PHILOSOPHY.—The analysis of basic philosophical concepts and beliefs with a view to critical evaluation and constructive emendation of them. Emphasis on the practice as well as the principles of philosophical criticism and problem solving. 3 units each. Enrollment only by permission of the Department. 291 is ordinarily prerequisite for 292. ALL MEMBERS OF THE GRADUATE STAFF

FOR GRADUATES

331, 332. SEMINARS IN SPECIAL FIELDS OF PHILOSOPHY.—3 units. ALL MEMBERS OF THE GRADUATE STAFF

PHYSICS

PROFESSOR NIELSEN, CHAIRMAN—119 PHYSICS BUILDING; PROFESSORS LEWIS, DIRECTOR OF GRADUATE STUDIES—043 PHYSICS BUILDING; PROFESSORS GORDY, NEWSOM, AND SPONER; ASSOCIATE PROFESSORS BLOCK, GREULING, AND WILLIAMSON; ASSISTANT PROFESSOR MEYER; VISITING ASSISTANT PROFESSORS DUNCAN AND ROBL

The Department of Physics offers graduate work leading to the A.M. and Ph.D. degrees. Course work is designed to give a broad basic foundation in classical and modern physics. All graduate students will be expected to acquire a thorough knowledge of the various branches of classical physics and some familiarity with modern physics and with basic laboratory skills. They will be required to take such course work in the 200-number courses as may be necessary to obtain this foundation.

The student will be required to take such course work as will best be adapted to the kind of work he will subsequently specialize in and to the kind of research he will undertake. The choice of minor will be similarly determined.

Since a practical reading knowledge of French and German is highly desirable for the student of physics, he should satisfy these language requirements as early as possible.

FOR SENIORS AND GRADUATES

201, 202. MECHANICS.—The fundamental principles of Newtonian mechanics; general dynamics of systems of particles, and rigid bodies; the methods of Lagrange and Hamilton; generalized mechanics. Prerequisite: Physics 125. 6 units.
ASSOCIATE PROFESSOR GREULING

213, 214. CONTEMPORARY PHYSICS.—A course which covers the fundamental concepts and the experimental basis of modern physics. Three lectures each week. 6 units. PROFESSORS SPONER AND LEWIS

217, 218. ADVANCED PHYSICS LABORATORY.—Measurements involving the fields of mechanics, electricity, magnetism, heat, sound, optics and modern physics. 2-6 units. ALL MEMBERS OF THE GRADUATE STAFF

219. ELECTRICITY AND MAGNETISM.—Fundamentals of electricity and magnetism, physical optics, electromagnetic waves. 3 units. PROFESSOR LEWIS

220. ADVANCED ELECTRONICS.—Vacuum tubes and solid state devices, advanced circuit analysis. 3 or 4 units. PROFESSOR LEWIS

FOR GRADUATES

303, 304. THERMODYNAMICS, STATISTICAL MECHANICS.—Fundamental laws of thermodynamics and statistical mechanics with applications to physics and chemistry. Gas laws; transport phenomena; elements of quantum statistics. 6 units. (1960-61) ASSISTANT PROFESSOR MEYER

306. LOW TEMPERATURE PHYSICS.—A study of the properties of matter near the absolute zero of temperature; superconductivity, liquid helium, adiabatic demagnetization. Prerequisite: Physics 303. 3 units. (Not 1960-61)
ASSISTANT PROFESSOR MEYER

309. SOLID STATE.—A study of matter in the condensed state, including metals, semiconductors, and insulators. Quantum theory of solids. Thermodynamic and electromagnetic properties of matter. Prerequisites: Physics 303 and 315 or equivalent. 3 units. (1960-61) ASSISTANT PROFESSOR MEYER

315-316. PRINCIPLES OF QUANTUM THEORY.—Original and fundamental concepts of quantum theory; wave and matrix mechanics; theory of measurements; exclusion principle and electronic spin. Prerequisite: Physics 201-202. 6 units. (Not 1960-61) VISITING ASSISTANT PROFESSOR DUNCAN

318-319. ELECTROMAGNETIC FIELD THEORY.—Electrostatics and potential theory; dielectric and magnetic media; the magnetic field of currents and the law of induction. Maxwell's electrodynamics; theory of wave optics; refraction; interference, and diffraction. Crystal optics. Prerequisite: Physics 219. 6 units. (Not 1960-61) ASSOCIATE PROFESSOR GREULING

320. THEORY OF ELECTRONS.—Lorentz' equations of electrodynamics. Classical theories of dispersion, magnetism, and conductivity. Theory of relativity. Prerequisite: Physics 318-319. 3 units.* ASSOCIATE PROFESSOR GREULING

323. THEORY OF ATOMIC SPECTRA.—Excitation of spectra, computation of wave lengths from photographs of spectra, study of the structure of atomic spectra with applications. 3 units. (1960-61) PROFESSOR SPONER

324. THEORY OF MOLECULAR SPECTRA.—A study of the structure of molecular spectra with applications. 3 units. (1960-61) PROFESSOR SPONER

331. MICROWAVE RADIATION.—Microwave generators, cavity resonators, transmission lines, radiation propagation and detection. 3 units. (1960-61)
PROFESSOR GORDY

335. MICROWAVE SPECTROSCOPY.—Application of microwaves in the determination of molecular, atomic, and nuclear properties. Stark and Zeeman effects in microwave spectroscopy. Magnetic resonance absorption. 3 units. (Not 1960-61) PROFESSOR GORDY

340. STRUCTURE OF MATTER.—Selected topics dealing with the constitution of matter, such as crystal structure and x-rays, the solid state and problems of molecular structure. 3 units.* PROFESSOR SPONER

341. ADVANCED TOPICS IN QUANTUM THEORY.—Quantum theory of radiation and collisions with special reference to nuclear and high energy physics. Prerequisite: Physics 315-316. 3 units. (1960-61)
VISITING ASSISTANT PROFESSOR DUNCAN

343. NUCLEAR PHYSICS.—Elementary theory of the deuteron; low energy neutron proton scattering; theory of nuclear reactions; penetration of potential barriers; nuclear energy levels. Prerequisite: Physics 315. 3 units. (1960-61)
PROFESSOR NEWSON

344. ADVANCED NUCLEAR PHYSICS.—The deuteron, nuclear forces, scattering of elementary particles, beta-radiation. Other aspects of nuclear physics susceptible of theoretical interpretation. Prerequisite: Physics 343. 3 units. (Not 1960-61) VISITING ASSISTANT PROFESSOR ROBL

345. HIGH ENERGY NUCLEAR PHYSICS.—Experimental and theoretical aspects of high energy nuclear processes; properties of mesons and hyperons. 3 units. (Not 1960-61) ASSOCIATE PROFESSOR BLOCK

351-352. SEMINAR.—A series of weekly discussions on topics related to the research projects under investigation in the Department. 2 units.
ALL MEMBERS OF THE GRADUATE STAFF

PHYSIOLOGY AND PHARMACOLOGY

PROFESSOR F. G. HALL, DIRECTOR OF GRADUATE STUDIES—203 MEDICAL SCHOOL; PROFESSORS F. BERNHEIM, EADIE; ASSOCIATE PROFESSOR HULL; ASSISTANT PROFESSORS KOSTYO AND LONG

(See MEDICAL SCHOOL, p. 98)

M203. HUMAN PHYSIOLOGY.—A course in human physiology in which the functions of all organ systems are covered. Special emphasis is given to the study of neuro-muscular and cardiovascular functions. Lectures, laboratory experiments and demonstrations, and conferences. Limited to sixteen students. Prerequisites: Chemistry 1-2 and Zoology 1-2. 6 units. PROFESSORS HALL AND EADIE

M261-262. HUMAN PHYSIOLOGY.—Six lectures and twenty laboratory hours per week. Prerequisites: Anatomy M201 and Biochemistry M241 (or equivalents) and at least one year of college physics. Feb.-June. Credits depending on work taken. (Maximum 8 units.) PROFESSOR HALL AND ALL MEMBERS OF THE GRADUATE STAFF

M365. RESPIRATION AND AERO-PHYSIOLOGY.—A study of the fundamental respiratory processes in living organisms, and of the special physiological responses and adjustments of the individual during high altitude flight. Lectures, conferences, laboratory. Prerequisites: M261-262 or equivalent. 4 units. PROFESSOR HALL

M369. PHARMACOLOGY. MODE OF ACTION OF DRUGS.—Studies and discussions of the pharmacological action of drugs in terms of biochemical and physiological processes. Lectures, conferences, and laboratory. Prerequisites: M261-262 or equivalent. 4 units. PROFESSOR F. BERNHEIM

M370. SEMINAR.—A weekly meeting of graduate students and staff in which papers reviewing classical and current physiological literature are reported. Required of all graduate students who are candidates for the A.M. or Ph.D. degree. 2 units. PROFESSORS HALL AND BERNHEIM; ASSOCIATE PROFESSOR HULL

M372. RESEARCH.—Individual investigations in the various fields of physiology. Credits to be arranged. PROFESSORS HALL AND BERNHEIM; AND ASSOCIATE PROFESSOR HULL

POLITICAL SCIENCE

PROFESSOR RANKIN, CHAIRMAN—308 LIBRARY; PROFESSOR WILSON, DIRECTOR OF GRADUATE STUDIES—405 LIBRARY; PROFESSORS BRAIBANTI, COLE, CONNERY, AND HALLOWELL; ASSOCIATE PROFESSOR SINDLER; ASSISTANT PROFESSOR PROCTOR; VISITING PROFESSORS MAYO AND PARTRIDGE; VISITING ASSOCIATE PROFESSOR WEBB

The Department of Political Science offers graduate work leading to the A.M. and Ph.D. degrees. Before being admitted to candidacy for the Ph.D. degree, an applicant is normally expected to have qualified for the A.M. degree.

Instruction is designed to prepare the student for teaching, for government service, and for other work related to public affairs. Before undertaking graduate study in political science, a student is ordinarily expected to have completed at least 12 semester hours of course work in political science, including some work in American government.

Fields of political science in which instruction is at present offered for candidates for the degree of Doctor of Philosophy are the following; American Government and Constitutional Law; Comparative Government (with special reference to European Institutions, Far Eastern Institutions, or Commonwealth Institutions); Political Theory; American State and Local Government; International Law and Organization; Public Administration. Candidates for the degree of Doctor of Philosophy who propose to major in political science must elect five fields, including Comparative Government and Political Theory; at least one of the five fields must be taken in a department other than the Department of Political Science.

FOR SENIORS AND GRADUATES

207. AMERICAN CONSTITUTIONAL LAW AND THEORY.—A study of leading principles of American government, as developed through judicial interpretation of the Constitution. 3 units. PROFESSOR RANKIN

209. PROBLEMS IN STATE AND LOCAL GOVERNMENT IN THE UNITED STATES.—A study of the historical development of state and local governments, their present organization and subdivisions, and their relation to each other. Special attention is given to the position of the states in the federal union through the study of federal-state, inter-state, and state-local relation. 3 units.
PROFESSOR RANKIN

211. POLITICAL INSTITUTIONS OF THE FAR EAST.—An analysis of the ideas underlying the development of government in Japan, China, and Korea. Study of the writings of Lao-tse, Confucius, and the sacred books of Buddhism and Shinto. Particular attention is given to the theory of Confucian bureaucracy, the Taikwa Reform, the development of the Tokugawa administrative state, the constitutional reforms of Sun Yat-sen in China and of the Meiji Era in Japan. 3 units.
PROFESSOR BRAIBANTI

212. INTERNATIONAL POLITICS OF THE FAR EAST.—An analysis of the relations of China, Japan, and Korea *inter se* and with outside powers, with emphasis upon changing power relationships within the Asian culture sphere. 3 units.
PROFESSOR BRAIBANTI

221. INTERNATIONAL PUBLIC ORGANIZATION.—A study of the structure and functioning of the United Nations organs, of related specialized agencies such as the International Labor Organization, and of regional agencies such as the Organization of American States and the North Atlantic Treaty Organization. 3 units. PROFESSOR WILSON

223. POLITICAL THOUGHT TO THE SEVENTEENTH CENTURY.—A survey from the time of Plato to the close of the seventeenth century; Graeco-Roman, Patristic and Germanic thought; individualism and cosmopolitanism; effect of the Church-State controversy and the conciliar movement; medieval constitutionalism; legislative sovereignty. 3 units. PROFESSORS HALLOWELL AND WILSON

224. MODERN POLITICAL THEORY.—An historical survey and philosophical analysis of political theory from the beginning of the seventeenth to the middle of the nineteenth century. Attention is given to the rise of liberalism, the Age of

Enlightenment, the romantic and conservative reaction, idealism and utilitarianism. 3 units. PROFESSOR HALLOWELL AND VISITING PROFESSOR MAYO

225. COMPARATIVE GOVERNMENT AND POLITICS.—A comparative study of modern political institutions and processes, with particular attention to European constitutional government and politics. 3 units.
PROFESSOR COLE AND VISITING PROFESSOR PARTRIDGE

226. COMPARATIVE GOVERNMENT AND POLITICS.—A comparative study of modern political institutions and processes, with particular attention to European totalitarian and authoritarian political system. 3 units.
PROFESSOR COLE AND ASSISTANT PROFESSOR PROCTOR

227-228. INTERNATIONAL LAW.—Elements of international law, particularly as interpreted and applied by the United States; rights and duties of states with respect to recognition, state territory and jurisdiction, nationality, diplomatic and consular relations, treaties, treatment of aliens, pacific settlement of disputes, international regulation of the use of force, and collective responsibility. 6 units.
PROFESSOR WILSON

229. RECENT AND CONTEMPORARY POLITICAL THEORY.—The rise of positivism and its impact upon modern political thought, the origins of socialism, Marxism and its variants, socialism in the Soviet Union, nationalism, Fascism and National Socialism, the crisis in modern democracy, Christianity and the social order. 3 units. PROFESSOR HALLOWELL

230. AMERICAN POLITICAL INSTITUTIONS.—A study of the formation and development of institutions of the national government in the United States, with historical and analytical treatment. Among other topics, this course is concerned with the Constitutional Convention of 1787, and the development of Congress, the Presidency, and the Supreme Court. 3 units. PROFESSOR RANKIN

231. AMERICAN POLITICAL THEORY—An analysis of the main currents in American political thought from colonial beginnings to the present day, with emphasis upon the development of liberalism in America. 3 units.
PROFESSOR HALLOWELL AND VISISTING PROFESSOR MAYO

234. CIVIL-MILITARY RELATIONSHIPS IN AMERICAN GOVERNMENT.—A consideration of the role of the military in American government both in practice and in theory. Special emphasis will be given to formal civil-military structural arrangements for determining policies such as the National Security Council, and to the degree of civilian control within the military establishment. 3 units.*
PROFESSOR CONNERY

235. THE BRITISH COMMONWEALTH.—An analysis of the political relationships between the members of the Commonwealth and a comparative study of the political systems of the Commonwealth countries, with particular reference to Canada. A course designed in part to utilize the occasional services of visiting professors from Commonwealth countries. 3 units.
VISITING PROFESSOR VAN DER HORST

241. ADMINISTRATIVE MANAGEMENT.—An advanced course in public administration with special attention being given to the development of scientific management, its application to government in the United States, and a consideration of current problems in organization, procedures, work simplification, and management improvement. 3 units.
PROFESSOR CONNERY AND VISITING ASSOCIATE PROFESSOR WEBB

242. NATIONAL ADMINISTRATION.—A study of the administrative organization, working concepts and procedures of the United States Government, illustrated through the operations of the Bureau of the Budget. 3 units.
PROFESSOR CONNERY

246. GOVERNMENT ADMINISTRATION AND PUBLIC POLICY.—Through use of the laboratory and case study techniques, a consideration of the types of administrative problems that the United States Government encounters in the field of public policy, and their possible solution. 3 units. PROFESSOR CONNERY

275. THE NATIONAL PARTY SYSTEM.—An intensive examination of selected facets of American national political parties, such as relationships between presidential and congressional politics, the politics of national conventions, recent foreign policy and party alignments, and the controversy over party government. 3 units
ASSOCIATE PROFESSOR SINDLER

276. COMPARATIVE STATE PARTIES AND POLITICS.—A selective analysis of party patterns in the states, including such topics as: classification schemes for state party systems, the impact of various nominating procedures on party organization, relationships between national and state politics, and the influence of party system on the operation of state government, with special attention to the South. 3 units.
ASSOCIATE PROFESSOR SINDLER

291. PROBLEMS OF MUNICIPAL GOVERNMENT.—An analysis of problems relating to the structural system and activities of municipalities in the United States. 3 units.
PROFESSOR RANKIN

292. MUNICIPAL ADMINISTRATION.—A study of principles and methods relating to municipal administration in the United States. 3 units.
PROFESSOR RANKIN

FOR GRADUATES

301-302. DEPARTMENTAL GRADUATE SEMINAR.—An introduction to research methodology, inter-disciplinary relationships and current research problems. Required of all graduate majors in political science. No credit.
PROFESSORS WILSON, RANKIN, COLE, HALLOWELL, CONNERY, BRAIBANTI, SINDLER, OTHER MEMBERS OF THE FACULTY AND VISITING LECTURERS

310. SEMINAR IN STATE GOVERNMENT.—Open to students who have completed course 209 or its equivalent. 3 units.
PROFESSOR RANKIN

311. SEMINAR IN FAR EASTERN POLITICS.—Open to students who have completed course 211 or its equivalent. 3 units.
ASSOCIATE PROFESSOR BRAIBANTI

321, 322. SEMINAR IN POLITICAL THEORY.—Open to students who have completed 6 semester hours in Political Science 223, 224, 229, 231 or their equivalents. 6 units.
PROFESSOR HALLOWELL

325, 326. SEMINAR IN COMPARATIVE GOVERNMENT.—Open to students who have completed courses 225 and 226 or their equivalents. 6 units.
PROFESSOR COLE AND VISITING PROFESSOR PARTRIDGE

327, 328. SEMINAR IN INTERNATIONAL LAW.—Open to students who have completed course 227-228 or its equivalent. 6 units.
PROFESSOR WILSON

341. SEMINAR IN PUBLIC ADMINISTRATION.—Directed reading, discussion and reports concerning the theory and practice of Public Administration. 3 units.
PROFESSOR CONNERY

401. SEMINAR ON THE BRITISH COMMONWEALTH.—3 units.
PROFESSORS COLE, HAMILTON, SPENGLER, AND BRAIBANTI

RELATED COURSE WORK IN THE SCHOOL OF LAW

There may be graduate credit for course work completed in the Duke University School of Law, under regulations referred to on page 98 of this *Bulletin*.

PSYCHOLOGY

PROFESSOR RODNICK, CHAIRMAN—106 BIVINS HALL; PROFESSOR ZENER, DIRECTOR OF GRADUATE STUDIES—205 PSYCHOLOGICAL LABORATORY; PROFESSORS ADAMS, COHEN, DAI, KIMBLE, KOCH, AND KUDER; ASSOCIATE PROFESSORS BANHAM, DIAMOND, GARMEZY, GUTTMAN, AND JONES; ASSISTANT RESEARCH PROFESSOR GAFFRON; ASSISTANT PROFESSORS BONEAU, BORSTELMANN, BREHM, DASTON, FARINA, LAKIN, OBRIST AND SPIELBERGER; LECTURER GEHMAN

The Department offers training leading to the A.M. and Ph.D. degrees, with specialization in a number of areas. Training for the Ph.D. is offered in general

experimental and physiological, social, clinical, and counseling psychology. A program of studies leading to the A.M. degree is offered in all areas except clinical and counseling psychology.

Whatever the field of psychology in which a student eventually specializes, he is required to have a thorough background in the facts, methods, and theories of general psychology. Graduate programs are arranged to achieve this common background primarily during the first year, with specialization in course work and research in subsequent years.

Normally the candidate for the Ph.D. degree is expected, early in his second year of residence, to formulate his further program of advanced studies, and by the end of his second year to have passed his language examinations, a departmental qualifying examination in his areas of intended doctoral research, and the preliminary examination. By this time also his doctoral dissertation subject should have been formulated. Emphasis is laid upon the completion of the dissertation, directed by a member of the staff, demonstrating competence and independence in the investigation of an original and significant problem.

As an integral part of their academic work during the first, second, and final year of residence, students specializing in clinical or counseling psychology will undertake field work in a variety of clinical settings. In addition, one year will be spent in an appropriate, approved internship, and a final year in residence at Duke University during which the dissertation should be completed.

The field of minor work is not restricted, but it may be pointed out that the fields most relevant to graduate study in psychology are zoology, philosophy of science, sociology and anthropology, physiology, neuroanatomy, mathematics, and education.

Further details concerning the program of studies in psychology may be obtained from the Director of Graduate Studies in Psychology.

201-202. PROSEMINAR.—An integrated core curriculum in general psychology, designed to provide an advanced background in the principles, and the empirical and theoretical methods, of the major fields of psychology. The separate sections, listed separately below, may be taken as individual courses by qualified students in other departments (for 3 units credit when special supplementary reading is undertaken). Students in psychology are expected normally to take all sections (2 units each), or their equivalents.

PROFESSORS ADAMS, KIMBLE, KOCH, KUDER, ZENER; ASSOCIATE PROFESSORS DIAMOND, GARMEZY, GUTTMAN; ASSISTANT PROFESSOR BREHM

201 A Learning	Guttman, Kimble	2-3 units
201 B Biological Bases	Diamond	2-3 units
201 C Personality Dynamics	Rodnick	2-3 units
201 D Perception	Zener	2-3 units
202 A Social Psychology	Brehm, Jones	2-3 units
202 B Systematic Psychology and Scientific Method	Koch	2-3 units
202 C Experimental-Personality	Garmezy	2-3 units

205. SENSORY DISCRIMINATION.—An analysis of neural mechanisms for discriminating between modalities, qualities within a modality, and differences in intensity and location. The neural basis for more complex discriminations; e.g., temporal and spatial patterns of sensation will also be considered. 3 units.

ASSOCIATE PROFESSOR DIAMOND

209. EXPERIMENTAL METHODS IN PSYCHOLOGY.—A study of methods for the identification, control, and recording of essential variables in psychological situations, with emphasis upon the relation of experimental techniques to problem formulation. Laboratory, lectures, and discussions. 3 units. PROFESSOR ZENER

212. PHYSIOLOGICAL PSYCHOLOGY.—An advanced study of the interrelationships between psychological and physiological processes. 3 units.

ASSISTANT PROFESSOR OBRIST

215. DEVELOPMENTAL PSYCHOLOGY.—The environmental forces conditioning the development of personality structure and the mechanisms contributing to psychological growth; critical periods in character formation from infancy to senescence. 3 units. PROFESSOR ADAMS

221-222. PROPRACTICUM.—Lectures, demonstrations and practice in the use of basic procedures, projective and non-projective, employed in clinical psychology; principles of interpretation and reporting of test findings. Laboratory periods will be held in clinical field facilities. 3 units each semester.
ASSOCIATE PROFESSOR GARMEZY AND ALL MEMBERS OF THE CLINICAL STAFF

236. THEORETICAL PSYCHOLOGY.—This course is devoted to the analysis of techniques of theory construction in psychology. The discussion of these methodological issues is co-ordinated with the analysis of concrete formulations in contemporary psychological theory. 3 units. PROFESSOR KOCH

242. MEASUREMENT OF APTITUDES, INTEREST, AND ACHIEVEMENT (also listed as Education 242).—A study of the theories and principles of psychological measurement as applied to aptitude, interest, and achievement testing. 3 units. PROFESSOR KUDER

265. FUNDAMENTAL STATISTICAL APPLICATIONS IN PSYCHOLOGICAL RESEARCH.—Introduction to probability and the use of statistics in description and hypothesis testing in psychology including the following applications: correlational techniques, chi-square and t tests, distribution-free tests and one-way analysis of variance. Prerequisite: Psychology 117-118 or equivalent. 3 units. (Second semester.) ASSISTANT PROFESSOR BONEAU

266. ADVANCED STATISTICAL APPLICATIONS IN PSYCHOLOGICAL RESEARCH.—The basic theory and applications of analysis of variance techniques to complex experimental designs will be covered. Additional advanced techniques, including factor analysis, will be introduced. Prerequisite: Psychology 265 or equivalent. 3 units. (First semester.) ASSISTANT PROFESSOR BONEAU

271. SEMINAR IN SELECTED PROBLEMS.—3 units.
VISITING PROFESSOR KOHLER

FOR GRADUATES

303-304. RESEARCH.—2 or 3 units. ALL MEMBERS OF THE GRADUATE STAFF

305. PSYCHOPATHOLOGY.—An examination of behavior disorders, with particular emphasis on explanatory concepts and the evidence from research in this field. 3 units. PROFESSOR RODNICK

306. SEMINAR IN DEVELOPMENTAL PSYCHOLOGY.—2 or 3 units.
PROFESSOR ADAMS

308. SEMINAR IN PSYCHOPATHOLOGY AND PERSONALITY THEORY.—3 units. PROFESSOR RODNICK

309. PROBLEMS OF LEARNING.—3 units. PROFESSOR KIMBLE

310. SEMINAR IN PERCEPTION.—3 units. PROFESSOR ZENER

311. SEMINAR IN INSTRUMENTAL BEHAVIOR.—3 units.
ASSOCIATE PROFESSOR GUTTMAN

312. SEMINAR IN THEORETICAL PSYCHOLOGY.—3 units. (First semester)
PROFESSOR KOCH

316. SEMINAR IN SOCIAL PSYCHOLOGY.—3 units.
ASSOCIATE PROFESSOR JONES

318. SEMINAR IN SOCIAL INFLUENCE.—3 units.
ASSISTANT PROFESSOR BREHM

320. SEMINAR IN THE THEORY OF MENTAL TESTS.—3 units.
PROFESSOR KUDER

322. SEMINAR IN PERSONNEL PSYCHOLOGY.—3 units. PROFESSOR KUDER

324. SEMINAR: BEHAVIORAL STUDIES OF THE BRAIN.—3 units.
ASSOCIATE PROFESSOR DIAMOND

335-336. CLINICAL PSYCHOLOGY PRACTICUM.—Seminar discussion and supervised field experience in the application of basic psychological procedures and principles to clinical cases in a variety of institutional settings. Prerequisite: Psychology 221-222. 3 units each semester. PROFESSOR COHEN AND ALL MEMBERS OF THE CLINICAL STAFF

338. SEMINAR IN RESEARCH IN MENTAL HEALTH AND MENTAL DISORDER.—3 units. ASSOCIATE PROFESSOR GARMEZY

341. SOCIETY, CULTURE AND BEHAVIOR DISORDERS.—A critical survey of current theories of the structure and genesis of psychoneurosis, with particular stress on psychoneurotic disturbances as problems of the self in relation to society and culture. 3 units. Second semester. PROFESSOR DAI

342. PRINCIPLES OF PSYCHOTHERAPY.—With permission of instructor. Prerequisite: Psychology 341. 3 s.h. PROFESSOR DAI

344, 345. ADVANCED SEMINAR IN CLINICAL PSYCHOLOGY.—1 unit each semester. ALL MEMBERS OF THE CLINICAL STAFF

371. PRE-SCHOOL BEHAVIOR PROBLEMS.—3 units.*
ASSOCIATE PROFESSOR BANHAM

RELATED COURSES IN OTHER DEPARTMENTS

Education 217, 227, 228, 240, 241, 244, 248, 258; Philosophy 103, 104, 203, 208, 224, 225, 228, 232, 241, 250, 331-332; Sociology and Anthropology 93, 94, 212, 213, 214, 238, 243, 246, 271, 276, 330, 380; Zoology, 151, 252, 271, 324, 328, 255-356; Physiology M261-262; Anatomy M204.

RELIGION

PROFESSOR BEACH, DIRECTOR OF GRADUATE STUDIES—308 DIVINITY SCHOOL; PROFESSORS CLARK, CUSHMAN, PETRY, AND STINESPRING; ASSOCIATE PROFESSORS ANDERSON, HENRY, HERZOG, LACY, MANSCHRECK, RANSON, AND PRICE; ASSISTANT PROFESSOR HILLEBRAND

The Department of Religion offers graduate work leading to the A.M. and Ph.D. degrees. Students may major in one of three fields: (1) Biblical Studies; (2) Historical Studies; and (3) Systematic and Contemporary Studies. They will be expected to take such courses in one or both of the other fields as will conduce to an adequate understanding of their chosen fields of specialization.

In addition to course work in these major fields, students will take such other courses in cognate fields as will contribute to the enrichment of their major studies. For those majoring in Biblical Studies, courses in ancient language and literature are suggested; for those majoring in Historical Studies, courses in history are suggested; and for those majoring in Systematic and Contemporary Studies, courses in philosophy, political science, and sociology are suggested.

Candidates for the Ph.D. degree must complete the language requirements in both French and German not later than the beginning of the second year of residence.

FIELD I. BIBLICAL STUDIES

201-202. FIRST HEBREW.—The principles and structure of the Hebrew language with translation of selected Old Testament narratives. 6 units.
PROFESSOR STINESPRING

207-208. SECOND HEBREW.—II Samuel the first semester and the Qumran Isaiah Scroll the second. 6 units.

209. BIBLICAL THEOLOGY.—A study of the Old and New Testaments from the standpoint of their theological unity. 3 units. ASSOCIATE PROFESSOR ANDERSON

217. THE NEW TESTAMENT IN GREEK.—Extensive reading of the Greek text of the New Testament, with special emphasis upon its interpretation. 3 units.
PROFESSOR CLARK

218. GALATIANS AND FIRST CORINTHIANS.—A detailed study of two of Paul's major epistles, based on the Greek text. 3 units. (Not 1960-61)
ASSOCIATE PROFESSOR ANDERSON

228. THE THEOLOGY OF THE GOSPEL AND EPISTLES OF JOHN.—A study of the origin of these writings; the provenance of their thought forms and symbolism; their influence on the early church; and contemporary significance. 3 units.
ASSOCIATE PROFESSOR PRICE

302. THEOLOGY OF THE INTERTESTAMENTAL LITERATURE.—A study of the Apocrypha and Pseudepigrapha with special reference to their relation to the theology of the Old and New Testaments. 3 units.
ASSOCIATE PROFESSOR ANDERSON

304. ARAMAIC.—A study of the Aramaic portions of the Old Testament, and selected passages from the Targums, Midrashes, and Talmuds. 3 units.
PROFESSOR STINESPRING

305. THIRD HEBREW.—An interpretative study of late Hebrew prose, with readings from Chronicles, Ecclesiastes, and the Mishnah. 3 units. (Not 1960-61)
PROFESSOR STINESPRING

307. SYRIAC.—A study of the script and grammar, with readings from the Syriac New Testament and other early Christian documents. Some knowledge of Hebrew and Aramaic prerequisite. 3 units. (1960-61) PROFESSOR STINESPRING

309. HISTORY OF THE ANCIENT NEAR EAST.—A specialized study of the civilizations of Egypt, Palestine, Syria, and Mesopotamia in the light of Biblical archaeology. 3 units. (Not 1960-61) PROFESSOR STINESPRING

310. OLD TESTAMENT PROPHECY.—The prophetic movement in Israel with special emphasis on the theological standpoint of the prophets of the eighth century B.C. 3 units. PROFESSOR STINESPRING

311. THE LIFE AND TEACHINGS OF JESUS.—A study of the events and sayings of the historical Jesus, in the light of His mission. 3 units. PROFESSOR CLARK

313. THE APOSTOLIC FATHERS.—A study of the Christian development from Clement of Rome to Polycarp (90-155 A.D.), with readings in the Greek text. 3 units. PROFESSOR CLARK

316. HELLENISTIC RELIGIONS.—A study of the Gentile religions in the Roman Empire, at the beginning of the Christian era. 3 units. PROFESSOR CLARK

317. THE SYNOPTIC GOSPELS.—A detailed study of their characteristics and contents, based upon the Greek text, with attention to their respective sources and to the development of synoptic criticism. 3 units. PROFESSOR CLARK

318. TEXTUAL CRITICISM OF THE NEW TESTAMENT.—A study of the scientific recovery of the Greek text on which modern versions are based; manuscript discoveries; principles of textual criticism; practice in collating original manuscripts in the Duke collection. 3 units. PROFESSOR CLARK

RELATED COURSES IN OTHER DEPARTMENTS

Greek 257; Latin 258; Aesthetics, Art, and Music 215, 216.

FIELD II. HISTORICAL STUDIES

224. CONCEPTIONS OF MAN IN WESTERN THOUGHT.—An analysis and interpretation of important types of philosophical and theological theory. 3 units.
PROFESSOR CUSHMAN

235. THE REFORMATION IN THE LIFE AND THOUGHT OF MELANCHTHON.—A study of Reformation thought patterns, trends, and tensions as seen

through the work of Philip Melanchthon (1497-1560). Special consideration will be given to other major figures in relation to Melanchthon. 3 units.
ASSOCIATE PROFESSOR MANSCHRECK

296. RELIGION ON THE AMERICAN FRONTIER.
ASSOCIATE PROFESSOR HENRY

321. PLATONISM AND CHRISTIANITY.—An analysis of Plato's philosophy and a survey of its continuing influence in Hellenistic and Christian thought. 3 units. PROFESSOR CUSHMAN

322. NINETEENTH CENTURY EUROPEAN THEOLOGY.—Protestant theology from Kant to Herrman together with representative British theologians. 3 units.
PROFESSOR CUSHMAN

330. THE CHURCH IN EUROPE SINCE 1800.—Emphasis is placed on the relation of the Church to the social, economic, and political life of Modern Europe. 3 units. PROFESSOR PETRY

331. THE SOCIAL MESSAGE OF THE EARLY AND MEDIEVAL CHURCH.—A study of the social teachings and contributions of the Christian Church prior to the Protestant Reformation. 3 units. (Not 1960-61) PROFESSOR PETRY

332. THE MEDIEVAL CHURCH.—Outstanding characteristics of the Medieval Church, emphasizing theory, polity, institutions, sacraments, and worship. 3 units.
PROFESSOR PETRY

334. CHURCH REFORMERS AND CHRISTIAN UNITY.—The work of such reformers as Marsilius of Padua, William of Ockham, Jean Gerson, Pierre d'Ailly, and Nicholas of Cusa in relation to ecclesiastical schism and the search for Christian unity through representative councils. 3 units. (Not 1960-61) PROFESSOR PETRY

336. CHRISTIAN MYSTICISM IN THE MIDDLE AGES.—Source studies, in historical perspective, of such late medieval mystics as Bernard of Clairvaux, the Victorines, Ramon Lull, Meister Eckhart, Richard Rolle, Catherine of Siena, and Nicholas of Cusa. 3 units. PROFESSOR PETRY

337. THE THEOLOGY OF MARTIN LUTHER. (See Divinity Bulletin for course statement.) ASSISTANT PROFESSOR HILLERBRAND

339. LEFT-WING MOVEMENTS OF THE REFORMATION.
ASSISTANT PROFESSOR HILLERBRAND

370. SEMINAR: JONATHAN EDWARDS.—A critical analysis of Edwards' major theological works. 2 units. PROFESSOR SMITH

387. CHRISTIAN ETHICS AND SOCIAL PHILOSOPHY.—Selected social philosophies from Locke to Sumner analyzed from the standpoint of Christian ethics. 3 units. ASSOCIATE PROFESSOR RANSON

391. HISTORICAL TYPES OF CHRISTIAN ETHICS I.—A critical study of representative statements of Christian ethical theory, through the early Reformation. 3 units. (Not 1960-61) PROFESSOR BEACH

392. HISTORICAL TYPES OF CHRISTIAN ETHICS II.—A continuation of C.E. 391, from the Reformation through current Christian ethical theory. Prerequisite: C.E. 391. 3 units. (Not 1960-61) PROFESSOR BEACH

395. CHRISTIAN THOUGHT IN COLONIAL AMERICA.—Exposition of the main currents in Protestant Theology. 3 units. PROFESSOR SMITH

396. CHRISTIAN THOUGHT IN NINETEENTH-CENTURY AMERICA.—Comparative study of Orthodoxy and Liberalism. 3 units. PROFESSOR SMITH

FIELD III. SYSTEMATIC AND CONTEMPORARY STUDIES

320. SEMINAR: FRIEDRICH SCHLEIERMACHER.—Critical examination of the dogmatic system. 2 units. PROFESSOR CUSHMAN

325. PHILOSOPHICAL THEOLOGY I.—Main problems in the history of philosophical theology. 3 units. PROFESSOR CUSHMAN

326. PHILOSOPHICAL THEOLOGY II.—Prolegomena to the system of Christian Theology. 3 units. (Not 1960-61) PROFESSOR CUSHMAN

328. TWENTIETH-CENTURY EUROPEAN THEOLOGY.—Critical examination of the thought of selected representative theologians. 3 units.
ASSOCIATE PROFESSOR HERZOG

372. SEMINAR: PAUL TILLICH.—An examination of Tillich's philosophical theology. 2 units. (Not 1960-61) PROFESSOR SMITH

380. EXISTENTIALISM.—3 units. ASSOCIATE PROFESSOR WILLIAM H. POTEAT

389. CHRISTIAN ETHICS AND CONTEMPORARY CULTURE.—A study of the interaction between Christian thought and current secular social theory. 3 units. PROFESSOR BEACH

390. CURRENT PROBLEMS IN CHRISTIAN ETHICAL THEORY.—A critical study of dominant issues in Christian ethics, through an analysis of a variety of contemporary Christian treatments of such problems as love, justice, community, and vocation. 3 units. PROFESSOR BEACH

393. THE CHRISTIAN INTERPRETATION OF HISTORY.—A comparative examination of the chief secular and Christian theories of history current in Western thought. 3 units. PROFESSOR BEACH

394. CHRISTIANITY AND THE STATE.—The relation of the Christian theory of the State to political problems, with special consideration of the religious assumptions underlying democratic theory and practice and of the relationship of church to state. 3 units. (Not 1960-61) PROFESSOR BEACH

397. CONTEMPORARY AMERICAN THEOLOGY.—Critical appraisal of major tendencies. 3 units. PROFESSOR SMITH

ROMANCE LANGUAGES

PROFESSOR DAVIS, CHAIRMAN—214 CARR; PROFESSOR PREDMORE, DIRECTOR OF GRADUATE STUDIES—201 CARR BUILDING; PROFESSORS CASTELLANO, DOW, JORDAN, AND WALTON; ASSOCIATE PROFESSORS CHERPACK, CORDLE, AND FEIN; ASSISTANT PROFESSORS GRANT AND VINCENT

The Department of Romance Languages offers graduate work leading to the A.M. and Ph.D. degrees. In order to undertake graduate study in this Department, the student should normally have credit for four years of college courses in the chosen language, or 18 semester hours beyond the conventional two units offered at entrance to college. In addition to this minimum requirement, the student should have had one semester of review in composition and grammar.

It is recommended that candidates for the A.M. degree take a second Romance language as the minor subject.

A candidate for the Ph.D. degree should be equipped to follow graduate courses in a second Romance language. For this degree some training in Romance linguistics will be required, the amount to be determined by the Department upon consideration of the student's preparation in the field.

FRENCH

FOR SENIORS AND GRADUATES

213. FRENCH CLASSICISM.—Its initial phase. Reading from Malherbe, Balzac, Voiture, Descartes, Corneille, Molière, and others. 3 units. (1960-61)
PROFESSOR WALTON

214. FRENCH CLASSICISM.—Its maturity. Readings from Pascal, Racine, La Fontaine, La Rochefoucauld, Boileau, Bossuet, Madame de Sévigné, La Bruyére, Saint-Simon, and others. 3 units. (1960-61) PROFESSOR WALTON

215, 216. THE MODERN FRENCH NOVEL.—A survey of the novel form from the seventeenth to the twentieth century, with particular attention to the analysis of fundamental literary trends; classicism, rationalism, romanticism, and realism. 6 units. (Not 1960-61) PROFESSOR JORDAN

219, 220. OLD FRENCH LANGUAGE AND LITERATURE.—Reading and discussion of representative texts of the Medieval Period accompanied by a study of the evolution of the language. 6 units. (1960-61)
ASSISTANT PROFESSOR VINCENT

221. THE NINETEENTH CENTURY FRENCH NOVEL.—Its initial phase. The Romantic hero in conflict with society, with special emphasis on the works of Stendhal and Balzac. 3 units. (Not 1960-61) ASSISTANT PROFESSOR GRANT

222. THE NINETEENTH CENTURY FRENCH NOVEL.—Its continuation. The decline of the individual hero. Flaubert and Zola will receive intensive study. 3 units. (1960-61) ASSISTANT PROFESSOR GRANT

227. FRENCH POETRY SINCE THÉOPHILE GAUTIER.—Readings from the principal figures of the Parnassian and Symbolist movements, including Baudelaire, Leconte de Lisle, Heredia, Verlaine, Rimbaud, Mallarmé and Régnier. 3 units. (Not 1960-61) PROFESSOR WALTON

238. ANATOLE FRANCE.—An analysis of the principal phases of his work and its relation to the French tradition. Reading of his poetry, *Le Crime de Sylvestre Bonnard, Thais, Le Jardin d'Epicure, Les Dieux ont Soif, Le Lys Rouge, L'Ile des Pingouins,* parts of *La Vie Littéraire.* 3 units. (Not 1960-61)
PROFESSOR WALTON

241, 242. FRENCH LITERATURE AND THOUGHT IN THE AGE OF ENLIGHTENMENT.—First semester: The new philosophy and its propagation. Lectures and discussions involving texts by Fontenelle, Montesquieu, Voltaire, Rousseau, Diderot, and others. Second semester. The crisis in literary aesthetics. Readings, lectures, and discussions bearing on the clash between Classicism and new literary orientations. 6 units. (1960-61) ASSOCIATE PROFESSOR CHERPACK

FOR GRADUATES

245. FRENCH LITERATURE OF THE TWENTIETH CENTURY.—1895-1925: the metamorphoses of Symbolism (Proust, Gide, Claudel). Extensive readings from the varied works of the three writers. 3 units. (Not 1960-61)
ASSOCIATE PROFESSOR CORDLE

246. FRENCH LITERATURE OF THE TWENTIETH CENTURY.—1925-1955: The Existentialist conversion (Malraux, Sartre, Camus). Extensive readings from the varied works of the three writers. 3 units. (1960-61)
ASSOCIATE PROFESSOR CORDLE

311, 312. FRENCH SEMINAR.—Each semester one of the following topics will be selected for intensive treatment: (a) Studies in Sixteenth Century Literature, (b) Studies in Eighteenth Century Literature, (c) Studies in Realism and Naturalism, (d) Studies in Nineteenth Century Criticism, (e) Studies in Contemporary Literature. 3 units each semester.*
PROFESSORS JORDAN AND WALTON; ASSOCIATE PROFESSOR CHERPACK

—. GRADUATE READING COURSE. An intensive course in French to develop rapidly the ability to read French in several fields. Graduate students only. No credit.

SPANISH

FOR SENIOR AND GRADUATES

255. MODERN LATIN AMERICAN LITERATURE.—The coming of age of Latin American literature in the nineteenth and twentieth centuries, with particular attention to the Modernist movement. 3 units. (Not 1960-61)
ASSOCIATE PROFESSOR FEIN

256. CONTEMPORARY LATIN AMERICAN LITERATURE.—Trends in Latin American literature after the Modernist movement. Analysis of significant works in various genres. 3 units. (1960-61) ASSOCIATE PROFESSOR FEIN

257. OLD SPANISH LANGUAGE.—The historical development of the language together with illustrative readings. 3 units. (1960-61) PROFESSOR DAVIS

258. OLD SPANISH LITERATURE.—The literature of the Middle Ages and Early Renaissance. 3 units. (Not 1960-61) PROFESSOR DAVIS

260. ADVANCED COMPOSITION AND SYNTAX.—Study of fundamental difficulties in the language; practice in writing idiomatic Spanish; exercises in free composition. For students who have a satisfactory command of Spanish grammar and fair conversational ability. 3 units. PROFESSOR CASTELLANO

261. NINETEENTH CENTURY NOVEL.—A study of literary and social trends in the last half of the nineteenth century. Readings will be selected from the novels of Valera, Pereda, Galdós, Pardo Bazán, Blasco Ibáñez, and their contemporaries. 3 units. (1960-61) PROFESSOR DAVIS

264. MODERN AND CONTEMPORARY SPANISH THEATER.—A brief review of modern and contemporary Spanish Theater from the period of Romanticism. Lectures, reading and discussion of the most representative works of Benavente, los hermanos Quintero, Garcia Lorca, Casona, etc. 3 units. (1960-61) PROFESSOR CASTELLANO

265. GOLDEN AGE LITERATURE: CERVANTES.—The life and thought of Cervantes with special emphasis on his *Quijote*. 3 units. (1960-61) PROFESSOR PREDMORE

266. GOLDEN AGE LITERATURE: THE DRAMA.—Study of the chief Spanish dramatists of the seventeenth century with readings of representative plays of this period. 3 units. (Not 1960-61) PROFESSOR CASTELLANO

275. CONTEMPORARY SPANISH LITERATURE.—The essay and Lyric Poetry. A study of the revision of national values and literary expression in the twentieth century with particular reference to the crisis of 1898 and to the enrichment of the Spanish tradition through extra-peninsular influences. 3 units. (Not 1960-61) PROFESSOR PREDMORE

276. CONTEMPORARY SPANISH LITERATURE.—The Novel. A study of tradition and innovation in the twentieth-century Spanish novel with emphasis on the novels of Unamuno, Baroja, Valle Inclán, and Pérez de Ayala. 3 units. (Not 1960-61) PROFESSOR PREDMORE

FOR GRADUATES

321, 322. HISPANIC SEMINAR.—Each semester one of the following topics will be selected for intensive treatment: (a) The Spanish Language in America, (b) Studies in Medieval Literature, (c) Studies in the Literature of the Golden Age, (d) Studies in the Latin American Literature. 3 units each semester.* PROFESSORS CASTELLANO, DAVIS, AND PREDMORE; ASSOCIATE PROFESSOR FEIN

THE TEACHING OF ROMANCE LANGUAGES

218. EVALUATION OF OBJECTIVES AND METHODS.—A study of the practical problems involved in teaching on the elementary, secondary, and college levels. Analysis of textbooks, special foreign language programs, audio-visual aids. Critical examination of modern techniques of written and oral testing. 3 units. PROFESSOR DOW

RUSSIAN

ASSISTANT PROFESSOR JEZIERSKI

No graduate degree is presently offered in Russian. The following courses may serve in the minor programs of students in other departments.

201, 202. THE NOVELISTS OF NINETEENTH-CENTURY RUSSIA.—Development of the Russian novel against the European background, with emphasis on Dostoevskij and Tolstoj. Extensive readings in English. Lectures, oral reports, class discussions and term paper. 6 units. ASSISTANT PROFESSOR JEZIERSKI

SOCIOLOGY AND ANTHROPOLOGY

PROFESSOR MCKINNEY, CHAIRMAN—215D SOCIAL SCIENCE BUILDING; ASSOCIATE PROFESSOR KERCKHOFF, DIRECTOR OF GRADUATE STUDIES—215E SOCIAL SCIENCE BUILDING; PROFESSORS LA BARRE AND THOMPSON; ASSOCIATE PROFESSORS BACK, PREISS, ROY, AND SMITH

The Department offers graduate work leading to the A.M. and Ph.D. degrees. Before undertaking advanced work in this department, a student must have completed a minimum of twelve semester hours of approved preliminary courses in the field, and twelve additional semester hours in the field or in related work. A student who is deficient in the minimum required work will be asked to take additional undergraduate courses agreed upon in conference with the Director of Graduate Studies.

Areas of concentration within the department are: theory, methods and statistics, complex social systems, social organization and institutions, social psychology, and anthropology. The student's program of study will be distributed among these areas as determined through consultation with the Director of Graduate Studies and the student's supervisory committee.

Candidates for advanced degrees in sociology usually take minor work in psychology, economics, political science, mathematics, philosophy, or education. Detailed requirements for the minor work, and for majors in other departments who wish to present sociology as minor work, may be obtained from the Director of Graduate Studies.

FOR SENIORS AND GRADUATES

232. PRIMITIVE RELIGION.—The ethnography, the social functions, and the socio-psychological meanings of religion in primitive societies. 3 units. (Formerly 212) PROFESSOR LA BARRE

234. PERSONALITY AND SOCIETY.—The sociology and social psychology of human personality, its origins in the primary group, its nature and varieties and its integrations into secondary group insitutions. 3 units. (Formerly 213) PROFESSOR LA BARRE

236. PERSONALITY AND CULTURE.—The influence of culture patterns and social institutions upon character structure, socialization of the individual, and the dynamics of human personality. Comparative anthropological materials will be drawn upon. Prerequisite: Course 234. 3 units. (Formerly 214) PROFESSOR LA BARRE

241. SOCIAL STRATIFICATION.—The nature of hierarchical and vertical differentiation in the economic, political and prestige structures in modern societies. The interrelationship of class, status and power strata and their influence on social institutions, personality structure, and group and individual behavior. 3 units. ASSOCIATE PROFESSOR ROY

242. THE SOCIOLOGY OF OCCUPATIONS AND PROFESSIONS.—The social significance of work. Analysis of forces changing the contemporary occupational structure, typical career patterns of professions and occupations, the social organization of occupational groups. 3 units. (Formerly 158) PROFESSOR MCKINNEY

247. COMMUNITY AND SOCIETY.—This course seeks to provide a frame of reference for the analysis and ordering of facts pertaining to the diverse cultures of the world, the State, the world community, the Great Society, news, mass behavior, social problems, races and classes. 3 units. (Formerly 237) PROFESSOR THOMPSON

253. SOCIAL INSTITUTIONS.—The study of particular institutions and the social movements out of which they developed, with emphasis on the development of general propositions concerning the nature, function and importance of institutions in society. 3 units. PROFESSOR THOMPSON

255. RACE AND CULTURE.—A comparative study of race relations in world perspective developed around such themes as race and personal identity, the geography and ecology of race relations, the idea of race, and race conflict. 3 units. (Formerly 238) PROFESSOR THOMPSON

275. SOCIAL ATTITUDES AND INDIVIDUAL BEHAVIOR.—The importance of symbolic interaction, the development of the "self," the social structuring of the socialization process, individual movement within the social structure, and the importance of membership groups and reference groups. 3 units.
Associate Professor Kerckhoff

281. DEVELOPMENT OF SOCIOLOGICAL THEORY.—An analysis of the development, convergence and utilization of sociological theory. Prerequisite: 15 s.h. credit in sociology. 3 units. Professor McKinney

282. PRINCIPLES OF SOCIOLOGICAL ANALYSIS.—An advanced course in general sociology designed to give a systematic conception of social order, focusing on its structural components and the functions they serve. Undergraduates must have at least 15 s.h. and a B average in sociology and have the permission of the instructor. 3 units. Professor Thompson

290-291. METHODS OF SOCIOLOGICAL RESEARCH.—Issues involved in establishing and testing scientific propositions; the nature and relationship of concepts, hypotheses, theories and laws; and general principles of research design. Techniques such as sampling, observation, interviewing, data processing and analysis are learned through study and practice. This is a professional course intended primarily for graduate majors. Undergraduates who have at least 15 s.h. and a B average in sociology may be admitted by permission of the instructor. 6 units. Associate Professor Smith

296, 297. STATISTICAL ANALYSIS IN SOCIOLOGY.—Such techniques as zero and higher order linear and curvilinear correlation, partial correlation, analysis of variance and covariance and factorial design are studied. Where possible, analagous non-parametric techniques are also considered. Prerequisite: 192 or its equivalent. 296 is prerequisite to 297. Undergraduates must have at least 15 s.h., a B average in sociology and obtain the permission of the instructor. 6 units.
Associate Professors Kerckhoff and Smith

FOR GRADUATES

330. SEMINAR IN ANTHROPOLOGY.—A seminar for advanced students who wish to pursue individual studies in racial and cultural anthropology. Offered both semesters. 1 to 3 units each semester. Professor La Barre

341. SPECIAL PROBLEMS OF COMPLEX SOCIAL SYSTEMS.

(a) INDUSTRIAL AND PROFESSIONAL SYSTEMS.—Analysis of problems of organization of work in such diverse settings as industrial plants, hospitals, and public administration groups. Problems of decision-making, recruitment, allocation of authority, informal organization, interorganizational relations. 3 units.
Professor McKinney and Associate Professor Roy

(b) MASS COMMUNICATIONS.—Theoretical problems in defining and distinguishing communication, communicative acts, communication processes, and communication systems. Work aimed toward the derivation of models and theories for each of these will be pursued. Students must have permission of the instructor or have had at least 6 units in some of the following courses: 142, 171, 172, 275, 373, 374. 3 units. Associate Professor Smith

(c) URBAN SOCIETY.—Analysis is made of the varying mechanisms through which urban society is integrated, how urbanites develop a sense of identification with the community, and the extent and mode of social dominance of the city in the larger society. 3 units.
Professor Thompson and Associate Professor Smith

(d) HUMAN ECOLOGY.—An examination of such issues as: the logic and utility of the ecological approach; the possibility of testing current ecological theories in non-western, non-urban environments; alternative explanations for the spatial patterning of social phenomena; selected methodological problems. 3 units. (Not 1960-61)
Professor Thompson and Associate Professor Smith

351, 352. SEMINAR IN SOCIAL ORGANIZATION.—Examination of such problems as the bases of social cohesion and continuity, the sources and effectiveness of social control mechanisms, the problem of social change in structural-functional theory. 6 units. PROFESSOR MCKINNEY AND THOMPSON

373, 374. SOCIAL PSYCHOLOGICAL ISSUES IN SOCIOLOGY.—Detailed exploration of selected problem areas such as the theory and measurement of social attitudes, role discontinuity and personality disorders, applications of reference group theory, the socialization process. Students must have permission of the instructor or have had at least 6 units in some of the following courses: 142, 171, 172, 275, 341b. 6 units. ASSOCIATE PROFESSORS BACK AND KERCKHOFF

385, 386. SEMINAR IN SOCIOLOGICAL THEORY.—Detailed analysis of methodological and substantive problems in utilizing comprehensive, middle-range, and discrete theories in varied sociological areas. Major emphasis on the use of theory in empirical research. Open to students who have had 281 or its equivalent. 6 units. PROFESSOR MCKINNEY AND ASSOCIATE PROFESSOR PREISS

397, 398. SEMINAR IN SPECIAL RESEARCH PROBLEMS.—Advanced students will be given the opportunity to take intensive work on such topics as sampling plans, development of research designs from statistical models, experimental techniques, the relation of theory to research. Open to students who have had 290-291 and 296, 297 or their equivalent or by permission of the instructor. 6 units. ASSOCIATE PROFESSORS BACK, SMITH, AND KERCKHOFF

ZOOLOGY

PROFESSOR WILBUR, CHAIRMAN—224 BIOLOGY BUILDING; PROFESSOR HORN, ACTING DIRECTOR OF GRADUATE STUDIES—06 BIOLOGY BUILDING; PROFESSORS BOOKHOUT, GRAY, GREGG AND K. SCHMIDT-NIELSEN; ASSOCIATE PROFESSORS BAILEY, FLUKE, HUNTER, LIVINGSTONE AND ROBERTS; ASSOCIATE RESEARCH PROFESSOR B. SCHMIDT-NIELSEN; ASSISTANT PROFESSORS KLOPFER, SANDEEN, VERNBERG AND WARD

To undertake study toward an advanced degree in zoology a student should have completed an undergraduate major in zoology or its equivalent. This normally amounts to twenty-four or more hours of course work distributed among various fields of zoology, and must include comparative vertebrate anatomy or vertebrate zoology, embryology, and physiology. At least a year of chemistry is required. Physics is recommended. Candidates for the doctorate will be expected to have had not less than two years of chemistry and a year of botany. For some phases of zoology, organic chemistry is essential.

Required work for the A.M. ordinarily includes 18 units of advanced course work in zoology, six units of course work in a minor department, and an acceptable thesis.

Candidates for the Ph.D. degree are expected to be broadly trained zoologists. The program of each candidate is determined by a committee which reviews previous training and sets specific requirements to be met. Normally the program includes one or more graduate courses in each of several fields of zoology; courses in a minor subject; wide reading in science in general and in biology in particular; research; and a dissertation based on original work. A first draft of the thesis must be submitted to the major professor by March 15 of the year in which the degree is to be conferred.

FOR SENIORS AND GRADUATES

201. ANIMAL BEHAVIOR.—A review of the major developments in the field with emphasis on recent physiological and developmental studies. Prerequisites: Physiology, Genetics and Evolution, or permission of the instructor. 3 units. (1960-61) ASSISTANT PROFESSOR KLOPFER

203. ECOLOGY.—Relation of animals to environment. Lectures, reading, reports, conferences; laboratory and field work. 4 units. PROFESSOR GRAY

204. ADVANCED PARASITOLOGY.—Lectures, conferences, readings, and laboratory work dealing with practical and theoretical problems of classification, morphology, and host relations of animal parasites. Prerequisite: Zoology 161 or equivalent. 4 units.* ASSOCIATE PROFESSOR HUNTER

210. EXPERIMENTAL GENETICS.—The relationship of phenotype to genome and environment; cytogenetics, recent research in the field of genetics. Laboratory. Prerequisites; Principles of heredity (one of the following: Zoology 110, Botany 101, 202, or equivalent) or consent of instructor. 4 units. (1960-61)
ASSISTANT PROFESSOR WARD

216. LIMNOLOGY.—A study of lakes, ponds, and streams, including their origin, development, geochemistry, energy balance, productivity, and the dynamics of the plant and animal communities living in them. Lectures, field trips, laboratory work. Prerequisites: Chemistry 1 and 2, Physics 1 and 2, Mathematics 51, and one year of biology; or permission of instructor. 4 units. (Not 1960-61)
ASSOCIATE PROFESSOR LIVINGSTONE

222. ENTOMOLOGY.—Anatomy, physiology, embryology, and classification of insects. Prerequisite: one year of zoology. 4 units.* PROFESSOR GRAY

224. VERTEBRATE ZOOLOGY.—A study of the life histories, adaptations, ecology, and classification of vertebrate animals. Prerequisite: Zoology 53. 4 units. (Not 1960-61) ASSOCIATE PROFESSOR BAILEY

228. EXPERIMENTAL EMBRYOLOGY.—Lectures, readings, reports, and laboratory work. Prerequisites: Zoology 53, 92, 156, 271, or equivalent. 4 units. (Not 1960-61) PROFESSOR GREGG

238. SYSTEMATIC ZOOLOGY.—The fundamental theory and practice involved in the collection, identification, and classification of animals. Prerequisite: Zoology 1 and 2. 4 units. (1960-61) ASSOCIATE PROFESSOR BAILEY

243. CYTOLOGY.—The structure of the cell. Lectures, readings, reports, and laboratory work. Prerequisites: Zoology 53, 92, 156, or equivalent. 4 units. (1960-61) ASSOCIATE PROFESSOR ROBERTS

245. RADIATION BIOLOGY.—An introductory course which deals with the basic physical, chemical, and biological principles upon which the study of the biological effects of radiation is based. Laboratory work and lectures. Prerequisites: mathematics through trigonometry, college physics, inorganic and organic chemistry. 4 units. (1960-61) ASSOCIATE PROFESSOR FLUKE

249. PHYSIOLOGY OF INVERTEBRATE RECEPTORS, EFFECTORS, AND COORDINATION.—A study of sense organs, endocrine and nervous mechanisms, muscles, chromatophores and other effectors in selected invertebrate animals. Lectures, reports and laboratory. Prerequisites: 2 years of Zoology, 1 year of Chemistry, 1 year of Physics (may be taken concurrently). 4 units. (1960-61)
ASSISTANT PROFESSOR SANDEEN

252. COMPARATIVE PHYSIOLOGY.—The physiological mechanisms of animals studied on a comparative basis. Prerequisite: Zoology 151 or equivalent. 4 units.
PROFESSOR SCHMIDT-NIELSEN

253. ADVANCED VERTEBRATE MORPHOLOGY.—Descriptive and experimental studies in comparative vertebrate morphogenesis. Lectures, readings, reports, and laboratory. Prerequisites: Zoology 53, 92. 4 units. (1960-61)
PROFESSOR HORN

271. CELLULAR PHYSIOLOGY.—The physiological processes of living matter approached through studies of cells. Prerequisites: two years of biology and at least one year of chemistry. 4 units. PROFESSOR WILBUR; ASSOCIATE RESEARCH PROFESSOR B. SCHMIDT-NIELSEN

274. INVERTEBRATE ZOOLOGY.—A study of structure, functions, and habits of invertebrate animals under normal and experimental conditions. Field trips will be made to study, collect, and classify animals in their natural habitats. Prerequisites: Zoology 1 and 2. 4 units.* PROFESSOR BOOKHOUT

276. PROTOZOOLOGY.—The morphology, physiology, taxonomy, and culture of protozoa. Prerequisites: Zoology 1 and 2. 4 units. (1960-61)
PROFESSOR BOOKHOUT

278. INVERTEBRATE EMBRYOLOGY.—Lectures, readings, and laboratory work dealing with rearing, development, and life history of invertebrates. Prerequisite: Zoology 92. 4 units.* PROFESSOR BOOKHOUT

FOR GRADUATES

307. FOUNDATIONS OF ZOOLOGY.—Lectures, readings, and discussions on the background and training essential for a professional zoologist. 2 units.*
ALL MEMBERS OF THE GRADUATE STAFF

345. MOLECULAR BIOLOGY.—Physical evidence for sub-cellular structure for proteins and other macromolecules in living processes. Genetic chemistry in virus and other microbiological replication, energy transfer and information concepts. Prerequisites: college physics and algebra, genetics, organic chemistry, and biochemistry (may be concurrent). 3 units. ASSOCIATE PROFESSOR FLUKE

351, 352. DEPARTMENTAL SEMINAR.—A weekly meeting of graduate students and faculty to hear reports and to discuss biological facts, theories, and problems. One hour a week throughout the year. 1 unit credit by arrangement.
ALL MEMBERS OF THE GRADUATE STAFF

353, 354. RESEARCH.—Students who have had proper training may carry on research under direction of members of the staff in the following fields: (a) Embryology, (b) Physiology, (c) Histology, Cytology, (d) Invertebrate Zoology, Invertebrate Embryology, (e) Ecology, Entomology, Vertebrate Zoology, (f) Vertebrate Morphology and Morphogenesis, (g) Parasitology, (h) Vertebrate Zoology, Systematic Zoology, (i) Limnology, Oceanography, (j) Ecology, (k) Genetics, (l) Biophysics, (m) Animal Behavior. Hours and credits to be arranged.
ALL MEMBERS OF THE GRADUATE STAFF

355, 356. SEMINAR.—One or more seminar courses in particular fields are given each semester by various members of the staff. These will be in the fields indicated under courses 353-354 above. 2 units.

MARINE LABORATORY. The following courses will be given at Duke University Marine Laboratory, Beaufort, N. C. during the summer of 1960: S203, Marine Ecology; S250, Physiological Ecology of Marine Animals; E274 Marine Invertebrate Zoology.

GRADUATE CREDIT FOR COURSES TAKEN IN THE SCHOOL OF LAW

Upon the recommendation of the Director of Graduate Studies, and upon the approval of the Dean of the Graduate School, students in the Social Sciences may take certain courses in the School of Law for graduate credit. In exceptional instances courses in the School of Law may be considered as fulfilling a student's requirements for a minor.

MEDICAL SCHOOL

The facilities of the several Departments of the Medical School listed below and alphabetically as departments are available to qualified graduate students, already admitted to the Graduate School, for independent or supervised research and investigation, whether or not they are working toward advanced degrees.

Graduate students wishing to pursue a major or minor on any of the following departments, or to enroll in any of the courses listed elsewhere, should consult or write the appropriate Director of Graduate Studies.

Because of the special schedules maintained in the Medical School, graduate students should write the Directors to ascertain the precise dates when courses are offered.

ANATOMY (see p. 52)

BIOCHEMISTRY AND NUTRITION (see p. 54)

MICROBIOLOGY (including MYCOLOGY, PARASITOLOGY, and HEMATOLOGY) (see p. 78)

PHYSIOLOGY and PHARMACOLOGY (see p. 82)

GRADUATE CREDIT FOR STUDENTS SPECIALIZING IN PHYSICAL THERAPY

Students specializing in physical therapy may request admission in the Graduate School and if admitted receive graduate credit for the graduate courses in anatomy, physiology, and psychology. Later they may complete their work for the Master of Arts degree in anatomy or physiology. (See above.) The graduate courses required in this program are Anatomy M201, 6 units and Physiology M203, 6 units. To complete the major for the Master of Arts degree, selection may be made from the following courses: Anatomy M203, 4 units; Anatomy M205, 2 units; Zoology 271, 4 units; Physiology M372, 2 or more units. For information concerning the Physical Therapy program write Miss Helen Kaiser, Director, Physical Therapy Department, Box 3247, Duke University Medical Center.

Fellows, Scholars, and Assistants

ANGIER DUKE MEMORIAL FELLOW

Name	*Department*	*Home Address*
Edgar B. Gillespie B.A., Wake Forest College; A.M., Duke University	English	Durham, N. C.

JAMES B. DUKE FELLOWS

Robert R. Adams B.S., Virginia Polytechnic Institute	Chemistry	Norfolk, Va.
Thomas Rex Beard B.S., M.A., Louisiana State University	Economics	Baton Rouge, La.
John L. Bernard B.S., M.A., University of Alabama	Psychology	Selma, Ala.
Richard Adams Brashares B.A., M.A., University of Cincinnati	History	Wyoming, Ohio
Paul A. Colinvaux B.A., M.A., Cambridge University	Zoology	Fredericton, New Brunswick
Edwin M. Curley A.B., Lafayette College	Philosophy	Pittsburgh, Pa.
Walter F. Daves A.B., M.A., Emory University	Psychology	Durham, N. C.
L. Douglas DeNike A.B., Harvard University	Psychology	Bethesda, Md.
Ralph Walter Doermann A.B., Capital University; B.D., Capital University Seminary	Religion	Durham, N. C.
Lesley Lee Francis B.A., Radcliffe College; M.A., University of Miami	Romance Language	Durham, N. C.
Dick Leon George B.S., Oklahoma State University	Mathematics	Durham, N. C.
George Andrew Gutches, Jr. B.A., Michigan State University	History	Durham, N. C.
James A. Hart B.A., University of London; M.A., University of South Carolina	English	Durham, N. C.
John William Heintz B.A., Saint Lawrence University	Philosophy	Buffalo, N. Y.
Robert P. Higgins B.A., M.A., University of Colorado	Zoology	Denver, Colo.
John Edmund Howell B.A., Stetson University; B.D., Yale Divinity School	Religion	Chapel Hill, N. C.
James Neal Huffaker B.A., University of Chicago; M.S., Emory University	Physics	Atlanta, Ga.
Russell J. Hutnik B.S., Pennsylvania State University; M.F., Yale University	Forestry	State College, Pa.
David Kelly A.B., University of Pittsburgh	Political Science	Jeanette, Pa.
David E. Kemp A.B., Duke University	Psychology	Daytona Beach, Fla.
George H. LaRoi B.A., Lake Forest College	Botany	Winnetka, Ill.
Charles G. Martell B.A., Saint Lawrence University	Philosophy	Watertown, N. Y.
Donald G. Mathews B.A., College of Idaho; B.D., Yale University	History	Nampa, Idaho
Arthur McA. Miller B.A., Princeton University	English	Ruskin, Fla.
Christian Harry Miller A.B., Franklin and Marshall College	English	Waynesboro, Pa.
J. E. Munzenrider B.S., Belmont Abbey College	Chemistry	Warner Robins, Ga.
Don C. Piper B.A., M.A., University of Maryland	Political Science	Hyattsville, Md.
Calvin Lewis Porter B.A., Phillips University; B.D., Seminary at Phillips University	Religion	Durham, N. C.
Calvin Lee Skaggs B.A., Henderson State Teachers College	English	Searcy, Ark.
Gunter Friedrich Sommer B.D., Methodist Theological Seminary, Frankfort, Germany	Religion	Echterdingen, Germany
Richard Lee Staley A.B., Guilford College; A.M., Duke University	Romance Language	Liberty, N. C.

Name	*Department*	*Home Address*
Clarence Stone A.B., University of South Carolina	Political Science	Carlisle, S. C.
Karl David Straub B.S., Duke University	Civil Engineering	Louisville, Ky.
Edward David Watt B.A., M.A., University of Western Australia	Political Science	South Perth, Australia
James Irving Wimsatt A.B., University of Michigan; M.A., Wayne State University	English	Grosse Pointe, Mich.

OTTIS GREEN FELLOWSHIP

Anthouy Esler B.A., University of Arizona; A.M., Duke University	History	Wheaton, Ill.

GURNEY HARRISS KEARNS FELLOWS IN RELIGION

Bernard H. Cochran A.B., Stetson University; B.D., Th.M., Southeastern Baptist Theological Seminary	Religion	Arcadia, Fla.
Thor Hall A.B., Oslo University; B.D., Scandinavian Methodist Seminary; M.R.E., Duke University (June, 1960)	Religion	Durham, N. C.
Alan Wayne Gragg B.A., Furman University; B.D., Southern Baptist Theological Seminary	Religion	Durham, N. C.
Louis Wendell Hodges A.B., Millsaps College; B.D., Duke University	Religion	Eupora, Miss.
Sam J. Womack A.B., Florida Southern College; B.D., Duke University	Religion	Durham, N. C.

UNIVERSITY RELIGIOUS COUNCIL FELLOW

Gunter Friedrich Sommer B.D., Methodist Theological Seminary, Frankfort, Germany	Religion	Echterdingen, Germany

COMMONWEALTH CENTER FELLOWS

Peter John Boyce B.A., University of Western Australia	Political Science	Applecross, Australia
John Fulton Chant B.A., University of British Columbia	Economics	Vancouver, Canada
Welf H. Heick B.A., University of Western Ontario	History	Durham, N. C.
Bruce W. Hodgins B.A., University of Western Ontario; M.A., Queen's University	History	Ontario, Canada
Rolaud J. Lamontagne B.A., Montreal University; B.Sc.S., M.Sc. Pol., Laval University	Political Science	Quebec, Canada
Peter John Lloyd B.A., Victoria University	Economics	Taranaki, New Zealand
Metodey Polasek B.Ec., University of Adelaide	Economics	North Adelaide, Australia
Albert John Robinson B. Com., University of Melbourne; B.A., Canberra University College	Economics	Canberra, Australia
Norman Samuels B.A., McGill University	Political Science	Montreal, Canada
Robert Hodges Shaffer B.A., M.A., University of Texas	Economics	Durham, N. C.
Keith Sloane B.Ec., University of Queensland	Ecouomics	Brisbane, Australia
Robert O. Tilman B.S., Memphis State College; A.M., Duke University	Political Science	Durham, N. C.
William T. Wareham B.A., University of Western Ontario	Economics	Ontario, Canada
David Edward Watt B.A., M.A., University of Western Australia	Political Science	South Perth, Australia

FELLOWS—SOUTHERN FELLOWSHIPS FUND

Jane R. Anderson A.B., University of South Carolina	English	Durham, N. C.
Beverly D. Brian B.A., Baylor University	English	Amarillo, Texas
Mary Ann Coslow A.B., Stetson University; A.M., Duke University	English	Miami, Fla.
William W. Daniel, Jr. A.B., Davidson College	Philosophy	Jacksonville, Fla.
Keith E. Davis A.B., Duke University	Psychology	Guilford College, N. C.
Alma L. Dennard B.A., Southwestern University	History	Nacogdoches, Texas
Samuel A. Dickson, Jr. B.S., University of Alabama	Physics	Tuscaloosa, Ala.
William R. Erwin, Jr. A.B., Birmingham Southern College	History	Tarrant, Ala.

Name	*Department*	*Home Address*
*Carlos T. Flick A.B., Wake Forest College; A.M., Duke University	History	Durham, N. C.
Jane G. Freeman A.B., Wake Forest College	Religion	Salisbury, N. C.
Alf A. Heggoy B.A., Randolph-Macon College	History	Hartford, Conn.
Bobby E. Layton A.B., Wake Forest College	Political Science	Durham, N. C.
Merrill Ann Maguire B.A., Stetson University	English	Jacksonville, Fla.
Jane DeHart Mathews A.B., Duke University	History	Bryson City, N. C.
Andrew J. Milnor A.B., University of North Carolina	Political Science	Wilmington, N. C.
Norma Taylor Mitchell B.A., William and Mary College	History	Norfolk, Va.
John A. Morgan B.A., Stetson University; A.M., Duke University	Political Science	Durham, N. C.
Jerald F. Robinson B.A., Southwestern at Memphis	Economics	Memphis, Tenn.
William O. Shropshire A.B., Washington and Lee University	Economics	Mobile, Ala.

WOODROW WILSON FELLOWS

Bona W. Ball A.B., University of Virginia (January, 1960)	English	Council, Va.
Doris A. Cole B.A., Furman University	English	Winterville, N. C.
Frank M. Coleman A.B., Kenyon College	Political Science	Pittsburgh, Pa.
Charles R. Day B.A., West Virginia Wesleyan College	Psychology	Durham, N. C.
Phoebe B. Estes A.B., University of Kentucky	English	Lexington, Ky.
Jo Ann Fralick B.A., Limestone College	English	Orangeburg, S. C.
Neal C. Gillespie B.A., Emory University	History	Atlanta, Ga.
Glenn T. Harper B.A., Furman University	History	Andalusia, Ala.
Anna P. Kremer B.A., Southwestern at Memphis	English	Louisville, Ky.
M. Elizabeth McClellan A.B., Erskine College	English	Greenwood, S. C.
Sylvia J. Morgan B.A., Mississippi State College for Women	History	Tupelo, Miss.
Denny E. Pilant A.B., Drury College	Political Science	Rogersville, Md.
James E. Shakespeare A.B., Presbyterian College	English	Hollywood, Fla.
Barbara A. Smith B.A., Furman University	English	Greenville, S. C.
Pinckney A. Steiner B.S., University of Georgia	Physics	Athens, Georgia
Annie L. Thompson B.A., University of Alabama	Romance Language	Vernon, Ala.
Paul W. Thompson B.S., Louisiana State University	Economics	Baton Rouge, La.
Robert F. Welsh B.A., Southwestern at Memphis	English	Memphis, Tenn.
Henry G. Williams, Jr. B.S., Wake Forest College	Mathematics	Annapolis, Md.
Edward E. Wilson A.B., Davidson College	Romance Language	Charlotte, N. C.
Molly F. Workman B.A., Longwood College	English	Durham, N. C.

COKESBURY AWARDS IN COLLEGE TEACHING

Jefferson H. Campbell B.A., B.D., Southern Methodist University	Religion	Beaumont, Texas
Mary Ruth Miller A.B., Florida State University; M.A., George Peabody College	English	Waleska, Ga.

DANFORTH FOUNDATION FELLOWSHIPS

Robert Darrell Carnes A.B., Stetson University	Philosophy	Durham, N. C.
Roderick Bruce Dugliss A.B., Stetson University	Political Science	Deland, Fla.

* Fall Semester Only

Name	*Department*	*Home Address*
Samuel Hays Magill A.B., University of North Carolina; B.D., Yale Divinity School	Religion	Chapel Hill, N. C.
Robert Ford Welsh B.A., Southwestern at Memphis	English	Memphis, Tenn.

NATIONAL SCIENCE FOUNDATION FELLOWSHIPS

David Robert Bryant B.S., Wake Forest College	Chemistry	Durham, N. C.
Frances Elizabeth Gray B.S., University of Richmond	Chemistry	Richmond, Va.
Robley Jasper Light B.S., Virginia Polytechnic Institute	Chemistry	Roanoke, Va.
John David Spangler B.S., Kansas State University	Physics	Atwater, Minn.
Marilyn Leanne Stagner B.S., George Washington University	Zoology	Bethesda, Md.
Stewart D. Work A.B., Oberlin College	Chemistry	Durham, N. C.

LILLY FOUNDATION FELLOWSHIPS AND SCHOLARSHIPS

Kenneth Lee Brown A.B., McPherson College; B.D., Bethany Seminary	Religion	Wichita, Kans.
Donald Eugene Cook B.A., Furman University; B.D., Th.M., Southeastern Baptist Theological Seminary	Religion	Pamplico, S. C.
Paul Lee Coulter B.A., Texas Christian University	Political Science	River View, Ala.
Lonnie Dean Kliever B.A., Hardin-Simmons University; B.D., Union Theological Seminary, New York	Religion	Fort Worth, Texas
Luther S. Ludlow A.B., Mercer University; B.D., Union Theological Seminary, New York	Religion	Durham, N. C.
John William MacGorman B.A., University of Texas; B.D., Th.D., Southwestern Theological Seminary	Religion	Fort Worth, Texas
Joyce Clydene Miller B.A., Ohio Wesleyan University	Political Science	Cincinnati, Ohio
Donald W. Millholland A.B., Duke University, B.D., Union Theological Seminary	Religion	Indianapolis, Ind.
Frank Joseph Mitchell B.S., Alabama Polytechnic Institute; B.D., Duke University	Religion	Fairfield, Ala.
Fred Hale Willhoite, Jr. A.B., Oklahoma Baptist University	Political Science	Durham, N. C.
James Keith Zink B.A., M.A., Harding College; B.D., Crozer Theological Seminary	Religion	Durham, N. C.

CHARLES W. HARGITT FELLOWSHIPS

Harish Chander Chopra M.S., Panjab University	Zoology	Chandigarh, India
Dorothy Scott Fry B.A., M.A., University of Missouri	Zoology	Durham, N. C.

NATIONAL DEFENSE ACT FELLOWSHIPS

John W. Cell A.B., Duke University	History	Raleigh, N. C.
Jerry Crawford B.A., Wake Forest College	History	Pikeville, N. C.
George H. Gadbois B.A., Marietta College	Political Science	Wollaston, Mass.
Frank Gado A.B., Dartmouth College	English	West New York, N. J.
Burt C. Hawkins A.B. University of Rochester	Political Science	Gowanda, N. Y.
George C. Hudson A.B. Duke University	English	Raleigh, N. C.
Charles F. Joiner B.A. Delta State College	History	Minter City, Miss.
Frank Jordan A.B. Duke University	English	Thomasville, N. C.
Jon H. Kaas B.A., Northland College	Anatomy	Spooner, Wis.
Stan Moskowitz A.B., Alfred University	Political Science	Bronx, New York
Joseph Osinchak B.A. Susquehanna University	Anatomy	Morea Colliery, Pa.
John D. Riebel B.A. North Central College; B.D. Yale University Divinity School	Anatomy	Chapel Hill, N. C.
Robert S. Robins A.B. University of Pittsburgh	Political Science	Pittsburgh, Pa.

Name	*Department*	*Home Address*
David H. Sixbey B.A. Arkansas State Teachers College	History	Conway, Ark.
Malcolm H. South B.A. College of William and Mary	English	Ware Neck, Va.
Max Sutton B.A. University of Arkansas	English	Huntsville, Ark.

UNIVERSITY FELLOWS

Steven David Blume A.B., Emory University	English	Mattapoisett, Mass.
Albert Yves Bodart Doctor of Law, Universite Catholique de Louvain, Belgium	Economics	Louvain, Belgium
Mahinder Datt Chaudhry M.A., University of Delhi	Economics	New Delhi, India
Peter John Lloyd B.A., Victoria University	Economics	Taranaki, New Zealand
Robert M. McConnel B.A., Washington and Jefferson College	Mathematics	Beaver, Pa.
Joyce Clydene Miller B.A., Ohio Wesleyan University	Political Science	Cincinnati, Ohio
James E. Pierce A.B., Miami University	Mathematics	Germantown, Ohio
Virginia Woodruff Price A.B., Randolph-Macon Woman's College	English	Arlington, Va.
Graves F. Ray B.A., University of Michigan; M.A., University of Chicago	History	Rocky River, Ohio
Larry Kermit Richman A.B., Colorado College; A.M., Duke University	English	Hartsville, Pa.
Charles W. Tapp B.A., Louisiana State University	Political Science	Greer, S. C.
William M. Tucker A.B., Wofford College; A.M., Vanderbilt University	English	Spartanburg, S. C.

GRADUATE SCHOLARS

Larry H. Addington A.B., M.A., University of North Carolina	History	Asheville, N. C.
Joseph Culbreth Alexander, Jr. A.B., B.D., Duke University	Religion	Kinston, N. C.
James William Anderson B.S., Tulane University, B.D., Austin Presbyterian Theological Seminary	Religion	Pittsboro, N. C.
Bob Branch Buchanan B.A., Emory and Henry College	Microbiology	Meadowview, Va.
Frederick LaRue Conrad A.B., Dickinson College	Economics	Durham, N. C.
Mary Paige Cubbison B.A., William and Mary College	History	Fort Sheridan, Ill.
Winfried R. Dallmayr Dr. jur., University of Munich, Germany; M.A., Southern Illinois University	Political Science	Augsburg, Germany
Marcia Dell Davidson B.A., Mount Holyoke College	Economics	Milton, Mass.
Joe DeWayne Dutton A.B., Georgia Teachers College	History	Glennville, Ga.
James Michael Efird A.B., Davidson College; B.D., Louisville Presbyterian Theological Seminary	Religion	Durham, N. C.
Magdi Mohamed El Kammash B.Com., Cairo University; M.P.H., University of North Carolina	Economics	Port Fouad, Egypt
Marcus Harris Evans, Jr. A.B., M.A., Baylor University	Political Science	Ty Ty, Ga.
Mario Raphael Friero D.Ec., Buenos Aires University	Economics	Durham, N. C.
Christine Diana Gonis A.B., Duke University	History	Arlington, N. J.
Robert Henry Grimm B.A., University of Miami; A.M., Duke University	Philosophy	Dunellen, N. C.
James Russell Hailey A.B., Elon College; B.D., Duke University	Religion	Durham, N. C.
Welf Henry Heick B.A., University of Western Ontario	History	Dnrham, N. C.
Bruce Willard Hodgins B.A., University of Western Ontario; M.A., Queen's University	History	Ontario, Canada
Charles Ellsworth Hood A.B., Syracuse University; B.D., Duke University	Religion	Freehold, N. Y.
Mirza Hamid H. Kizilbash B.A., University of Punjab	Political Science	Dacca, East Pakistan
Chun See Kim B.S., Seoul University	Botany	Seoul, Korea
Abraham D. Kriegel A.B., Hunter College	History	Bronx, N. Y.

Name	*Department*	*Home Address*
David Allen Lacy, III A.B., Duke University	Religion	Dallas, Texas
Richard Ingalls Leighton B.A., Tufts College	Economics	Newburyport, Mass.
Francis Bullitt Lowry A.B., Transylvania College; A.M., Duke University	History	Durham, N. C.
*Edwin S. Mack B.S., Ursinus College	Mathematics	Long Island, N. Y.
Kenneth G. McCarty, Jr. B.S., M.A., Mississippi Southern College	History	Hattiesburg, Miss.
Warner DeWitt Mendenhall B.S., Davidson College	Political Science	Durham, N. C.
John Robert Moore A.B., Stetson University	History	Bartow, Fla.
Donald C. Murray B.A., Yale University	English	Durham, N. C.
Noland P. Murray B.A., Baylor University; B.D., Southern Baptist Theological Seminary	Religion	Harrison, Ark.
Betsy Anna Murrell B.A., Ohio State University	Political Science	Columbus, Ohio
Stanley Alan Nicholson B.A., Montana State University	Economics	Missoula, Mont.
Malcolm O. Partin A.B., University of North Carolina	History	Enfield, N. C.
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Henry Powell Porter, Jr. B.A., Washington and Lee University	History	Charleston, W. Va.
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Norman Samuels B.A., McGill University	Political Science	Quebec, Canada
Robert Hodges Shaffer B.A., M.A., University of Texas	Economics	Durham, N. C.
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Harold David Weiss B.A., Southern Mississippi College; M.A., Potomac University	Religion	Buenos Aires, Argentina
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Richard Barry Westin B.A., Grove City College	History	Chapel Hill, N. C.
Donald Leigh Williams B.A., Baylor University; B.D., Southern Baptist Theological Seminary; M.A., Southern Methodist University	Religion	Fort Smith, Ark.
William Hayes Williams A.B., Washington and Lee University	History	Roanoke, Va.

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Donald Lee Atkinson B.A., Boston University	Philosophy	Malden, Mass.
Aldo John Baggia A.B., Iona College	French	Brooklyn, N. Y.
Hoyt B. Barrett, Jr. A.B., Emory University	Psychology	Durham, N. C.
Clelmer Kay Bartell B.S., Davidson College	Zoology	Hemingway, S. C.
James William Berry B.S., East Tennessee State College; M.S., Virginia Polytechnic Institute	Zoology	Abingdon, Va.
Beverly Elizabeth Bert B.A., Brooklyn College	Sociology	Brooklyn, N. Y.
Stephen Hurst Bishop B.A., Gettysburg College	Zoology	Madison, N. J.
Kenneth Arnold Boni B.S., Rensselaer Polytechnic Institute	Chemistry	White Plains, N. Y.
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Richard Conrad Bruce B.S., Tufts University	Zoology	Durham, N. C.
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* Fall Semester Only

Name	*Department*	*Home Address*
Joyce Elaine Cahoon B.A., Mount Union College	French	Cleveland Heights, Ohio
Lloyd G. Carroll B.S., East Carolina College; M.A.T., Duke University	Education	Weldon, N. C.
Carolyn Lee Carter A.B., Randolph-Macon Woman's College	Zoology	Richmond, Va.
Dayle Alan Casey B.A., Texas Christian University	Philosophy	Durham, N. C.
Stephan Robert Cavior A.B., Swarthmore College	Mathematics	Brookline, Mass.
Starr Culver A.B., Hood College	Zoology	Lake Wales, Fla.
John Monroe Cunningham B.A., Southern Methodist University	English	Henrietta, Texas
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Lewis Dunbar Dove B.S., M.S., University of Maryland	Botany	Durham, N. C.
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*John Alden Farrell B.A., Texas Christian University	Physics	Fort Worth, Texas
Mary Mel Farris B.S., Wake Forest College	Chemistry	Lexington, N. C.
Gordon Esley Finnie A.B., Lambuth College; A.M., Duke University (June 1960)	Religion	Whitehaven, Tenn.
Richard T. T. Forman B.S., Haverford College	Botany	Easton, Md.
Charles Kugler Franzen M.S., Indiana University; B.S., New Mexico Western College	Education	Durham, N. C.
Jackie Gene Frost B.S., Eastern Illinois University	Chemistry	Robinson, Ill.
Andrew John Gabor B.A., M.S., George Washington University	Anatomy	Durham, N. C.
Eva Gerstel B.A., Meredith College	Sociology	Raleigh, N. C.
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Alf S. Gunnerson, Jr. A.B., Elon College	Physics	Burlington, N. C.
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Marilyn Sue Kerr A.B., Gettysburg College	Zoology	Woodbury, N. J.
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Gerald S. Leventhal B.A., Queens College; M.A., Brooklyn College (January, 1960)	Psychology	Flushing, N. Y.
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John Raymond Lott B.A., M.A., University of Miami	English	Winter Park, Fla.
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David A. Mathewes, Jr. B.S., Davidson College; M.S., University of Kansas	Chemistry	Carrboro, N. C.

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William Howard McDaniel B.S., Guilford College	Physics	Greensboro, N. C.
John William McDonald B.S., Loyola University	Chemistry	Chicago, Ill.
Emma J. McMahon A.B., Woman's College, University of North Carolina	Botany	Swannanoa, N. C.
Ronald E. Montgomery B.S., Waynesburg College	Chemistry	Rural Valley, Pa.
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Emily Avis Pearlstein B.A., Tufts University	French	Barre, Vt.
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Lois Jean Reid B.S., William and Mary College	Mathematics	Portsmouth, Va.
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RESIDENT INVESTIGATOR, U. S. FOREST SERVICE

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RESEARCH ASSISTANTS

Edward E. C. Clebsch, A.B., M.S., University of Tennessee	Clarksville, Tenn.
Mary A. Dudley, A.B., Duke University	Durham, N. C.
Harvey S. Gold, B.S., University of Miami; A.M., Duke University	Miami, Fla.
Gilbert C. Hughes, III, A.B., Georgia State Teachers College, M.S., Florida State University	Tallahassee, Fla.
Pat Carey Kerr, A.B., University of Tennessee	Hartsville, Tenn.
Harold A. Mooney, A.B., University of California	Richmond, Calif.
Richard A. Pharis, A.B., University of Washington	Durham, N. C.
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Victor C. R. McLoughlin, Ph.D., Birmingham University	Cheshire, England
Gene F. Morris, Ph.D., Kansas State University	Marion, Iowa
Kurt Niedenzu, Ph.D., Heidelberg University	Durham, N. C.
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Sea Bong Chang, B.S., The Armed Forces College, Korea	Seoul, Korea
William Dunnavant, B.S., M.S., Miami University of Ohio	Sidney, Ohio
Frank N. Jones, A.B., Oberlin College	Carthage, Mo.
John William Kilgore, B.S., Hampden-Sidney College	Harrisonburg, Va.
Jean F. Kuo, A.B., Hunter College	New York, N. Y.
Pao Soong Lou, B.S., National Chekiang University	Taiwan, China
Harry B. Mark, A.B., University of Virginia	Riverton, N. J.
Philip E. Miller, B.S., St. Francis College; M.S., Purdue University	Altoona, Pa.
Francis W. Shephard, B.S., Franklin & Marshall College	York, Pa.
Kenneth J. Smith, A.B., East Carolina College, A.M., Duke University	Raleigh, N. C.
Thomas W. Webb, A.B., University of Virginia	Norfolk, Va.
Nancy L. Yarrington, B.S., University of Florida; A.M., Duke University	Orlando, Fla.
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Liow-Min Leu, B.S., Taiwan College of Engineering	Durham, N. C.
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Jack Edward Rathmell, B.S.E.E., Duke University	Miami Beach, Fla.
Wilber Clarence Stewart, B.S.E.E., Duke University	Williamston, N. C.
Frank Thomas Wooten, III, B.S.E.E., Duke University	Chadbourn, N. C.
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RESEARCH ASSISTANT	
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Michael Francis Shugrue, A.B., Nebraska University; A.M., Duke University	Durham N. C.
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Ira Dempsey Gruber, A.B., A.M., Duke University	Durham, N. C.
Horace Marshall Jarrett, A.B., Washington and Lee University; A.M., Duke University	Durham, N. C.

Name — *Home Address*

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RESEARCH ASSISTANTS

David R. Anderson, B.A., Bradley University — Peoria, Ill.
David R. Hayes, A.B., Duke University — Raleigh, N. C.
Richard Earl Hodel, B.S., Davidson College — Elkin, N. C.
Gene B. Parrish, A.B., M.A., University of North Carolina — Durham, N. C.
Rodney Jack Roth, B.A., Penn State University; M.F.A., State University of Iowa — Durham, N. C.
Harlan R. Stevens, B.A., University of Buffalo; M.S., Purdue University — Richmond, Va.
Leland H. Williams, B.S., University of South Carolina; M.S., University of Georgia — Columbia, S. C.

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Agustin Diaz, B.S., University of Chattanooga; M.S., University of Tennessee — Durham, N. C.

RESEARCH ASSOCIATE

Franz K. Weddeling, B.S., University of Muenster-Westf; Ph.D., Aachen Institute of Technology, Rhenania — Durham, N. C.

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NATIONAL SCIENCE FOUNDATION POSTDOCTORAL FELLOW

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E. Byerly Brucker, B.E., Ph.D., Johns Hopkins University — Baltimore, Md.
Hedwig Kohn, Ph.D., Breslau University — Durham, N. C.
Kamal Kishore Seth, Ph.D., University of Pittsburgh — Lucknow, India
David Ronald Tilley, B.S., University of North Carolina; M.S., Vanderbilt University; Ph.D., Johns Hopkins University — Fuquay Springs, N. C.
William Rowland Wisseman, Bach. of Nuclear Engin., North Carolina State College; Ph.D., Duke University — Greensboro, N. C.

RESEARCH ASSISTANTS

Earnest Dwight Adams, A.B., Berry College; M.S., Emory University — Cartersville, Ga.
Wayne Paul Amsbury, B.A., Rice Institute — Houston, Texas
Charles Daniel Bowman, B.S., Virginia Polytechnic Institute — Blacksburg, Va.
Salvatore George Buccino, B.S., Yale University — New Haven, Conn.
Chuen-chuen, Chang (Miss), B.S., National Taiwan University; M.S., University of South Carolina — Taiwan, China
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Charles Frederick Kellers, A.B., Swarthmore College — Upper Montclair, N. J.
John Newell Kidder, B.S., California Institute of Technology — Concord, Mass.
Tadashi Kikuchi, A.B., Wabash College — Chicago, Ill.
Arthur Z. Kovacs, A. B., Wabash College — Mansfield, Ohio

Name	*Home Address*
Declan Maolmhuire Larkin, B.Sc., National University of Ireland	Galway, Ireland
Robert Jan Lontz, B.Sc., Yale University	Wilmington, Del.
Donald T. Meyer, B.S., California Institute of Technology	Princeton, Ill.
Daniel Wayne Olds, A.B., Wabash College	Olney, Ill.
Delores Olness, A.B., Duke University	Kingsport, Tenn.
Robert James Olness, B.S., Massachusetts Institute of Technology	Alpena, Mich.
Paul Blair Parks, III, B.S., Duke University	Durham, N. C.
Francis Walter Patten, B.S., Massachusetts Institute of Technology	Fall River, Mass.
James Rogers Rusk, A.B., Oberlin College	South Hadley, Mass.
Robert Henry Tabony, B.A., M.A., Rice Institute	Houston, Texas
Lawrence Wilson Weston, B.S., Florida State University	Marianna, Fla.
Joseph Kevin White, B.S., Georgetown University	Little Neck, N. Y.
Raymond Morris Wilenzick, B.S., Tulane University; A.M., Duke University	Monroe, La.

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VETERANS ADMINISTRATION POSTDOCTORAL TRAINEE IN PHYSIOLOGICAL AND EXPERIMENTAL PSYCHOLOGY

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David A. Parton, B. A., Willamette University	Durham, N. C.

RESEARCH ASSISTANTS

David Arenberg, A.B., Johns Hopkins University	Baltimore, Md.
Howard Bradshaw, B.A., Yale University	Winston-Salem, N. C.
Barbara Chapman, A.B., Duke University	Durham, N. C.
Alan Clarke, A.B., M.S., University of Massachusetts	Durham, N. C.
Charles Culver, A.B., Columbia University	Erskin Lakes, N. J.
Peter Denny, B.A., University of Toronto	Ontario, Canada
George Greenberg, B.A., Brooklyn College	Durham, N. C.
Bruce Grossman, A.B., Yale University	New Haven, Conn.
Robert Langston, A.B., M.A., San Jose University	Durham, N. C.
Leonard Springer, A.B., University of Chicago	Roselle, N. J.
John Utley, B.S., University of Chicago	Durham, N. C.

Name	*Home Address*

DEPARTMENT OF SOCIOLOGY

RESEARCH ASSISTANTS

James C. Kimberly, B.A., M.A., Emory University	Durham, N. C.
Robert G. McDonald, B.A., University of Kansas; M.A., University of North Carolina (Jannary 1960)	Chapel Hill, N. C.

DEPARTMENT OF ZOOLOGY

A.A.U.W. FELLOWSHIP

Maryanne E. Robinson, A.B., Harpur College; M.S., Duke University	Binghamton, N. Y.

VETERANS ADMINISTRATION PREDOCTORAL TRAINEE

Miles A. Crenshaw, B.A., University of Virginia	Charlottesville, Va.

IRAQ GOVERNMENT FELLOW

Mnrad-Baba M. Mohammad, A.M., Duke University	Khanagin, Iraq

UNIVERSITY OF PUERTO RICO PREDOCTORAL FELLOW

Maximo Cerame-Vivas, B.S., University of Puerto Rico	Rio Diedras, P. R.
Fernando Cofresi Sala, B.S., M.P.H.Educ., University of Puerto Rico College of Agriculture and Mechanical Arts	Mayaguez, P. R.

U.S.P.H. PREDOCTORAL FELLOW

Donald S. Donglas, A.B., Oberlin College	Charlotte, N. C.

U.S.P.H. PREDOCTORAL PHYSIOLOGY TRAINEES

Chien Ping Lee, B.S., National Taiwan University	Penang, Malaya
Henry Otto Stone, Jr., A.B., Wofford College	Spartanbnrg, S. C.

RESEARCH ASSOCIATES

Arieh Bornt, Ph.D., Hebrew University in Jerusalem	Jerusalem, Israel
Roberta O'Dell, B.S., M.S., Pennsylvania State University; Ph.D., Duke University	Bradford, Pa.
Klaus Schmidt-Koenig, Ph.D., University of Freiburg	Heidelburg, Germany
Karl J. Ullrich, M.D., University of Wurburg; Dr. med. *habil.*, University of Gottingen	Gottingen, Germany
Winona Vernberg, A.B., A.M., DePaul University, Ph.D., Purdue University	Beaufort, N. C.
Norimitsu Watabe, M.S., Tohuku University	Tsn, Japan
Harry Wilson Wells, A.B., Johns Hopkins; A.M., Ph.D., Duke University	Bnxton, N. C.

RESEARCH ASSISTANTS

Eveline Bowers, B.S., Washington College	Seal Beach, Calif.
Helene Chipman, B.S., M.A., University of Missonri	Beaufort, N. C.
Luckett V. Davis, B.S., Middle Tennessee State College; A.M., Duke University	Smyrna, Tenn.
William Gnewuch, B.S., Marqnette University	Milwankee, Wis.
Edith W. Horn, B.S., Elmira College	Dnrham, N. C.
Yoon Kim, B.S., Seonl National University	Seoul, Korea
Doris H. King, A.B., Winthrop College	Beaufort, N. C.
Elizabeth N. King, A.B., Randolph-Macon College; M.A., Wellesley University	Durham, N. C.
Bertha Livingstone, B.A., Winthrop College; M.A., Yale University	Durham, N. C.
Margaret Marquardt, B.S., Bncknell University	Sayville, N. Y.
Donald C. Miller, B.S., University of Delaware	Newark, Del.
Barbara Mooney, B.A., University of California	Durham, N. C.
Peggy Orr, B.A., Middle Tennessee State College	Belfast, Tenn.
John Roberts, A.B., Dartmouth College	Natick, Mass.
Nancy D. Wolfson, A.B., University of Wisconsin, M.S., University of Tennessee	Murray, Ky.
Mary Jane Wells, B.S., A.M., Duke University	Buxton, N. C.
Marian Wilson, B.A., Vassar College	Chapel Hill, N. C.

DEPARTMENT OF BIOCHEMISTRY

POSTDOCTORAL FELLOWS

Francis G. Carey, Ph.D., Yale University	Durham, N. C.
Jayant Joshi, Ph.D., University of Poona, India	Durham, N. C.
Robert MacLeod, Ph.D., Duke University	Durham, N. C.
K. V. Rajagopalar, Ph.D., University of Madras	Durham, N. C.
Rita Wissel, M.D., Georgetown University	Chapel Hill, N. C.

N.I.H. PREDOCTORAL FELLOWS

Lorance Greenlee, B.A., University of Colorado	Durham, N. C.
John Imsande, M.S., Montana State College	Durham, N. C.

DEPARTMENT OF MICROBIOLOGY

POSTDOCTORAL FELLOW

Wilmer K. Blaylock, B.A., King College; M.D., Medical College of Virginia	Durham, N. C.

RESEARCH ASSOCIATE

Hilliard F. Hardin, A.B., A.M., Ph.D., Dnke University	Durham, N. C.

ADVANCED DEGREES CONFERRED JUNE 8, 1959

MASTER OF ARTS

Erma L. Adams
Robert Howe Ashby
Robert V. R. Bassett, Jr.
David Meade Bercaw
Robert Grady Blake
Stephen John Cotsoradis
Donald H. Craver
John Blake Darling
James Harve DeLap
George Edgar Goode
Robert Henry Grimm
Ira Dempsey Gruber
William Frank Halloran
Fleming James, III
Horace Marshall Jarrett
Robert Charles Krueger
James Marquis Kuist
Jang Hyun Lee
Francis Bullitt Lowry
Gertrud MacEwen
Leslie MacEwen
Marianne Bernhard Manassee
David Vance Martin
Peter Nelson Mayfield
Janice Mellinger
William Andrew Moffett
Murad-Baba M. Mohammad
Eldridge H. Moore, Jr.
John Harry Mortenson
Mary Janice Nowalk
Mary Linne Stitely Otter
Russell Jay Parkinson
Genet Little Parks
Evelyn Littleton Pugh
Sheila Anne Ramsay
William James Reid, Jr.
Larry Kermit Richman
Thip Ruangchotvit
Mohammed Jawad Saadaldin
Calvin Lee Skaggs
Suzanne Smith
Margaret Jones Stone
Diane TeStrake
Robert O. Tilman
Marion Frost Townend
Alice M. Walrath
Mary Jane Wells
Fred H. Willhoite, Jr.
Nancy Laura Yarrington

MASTER OF ARTS IN TEACHING

Janet Mitchell Arnold
Anne Soule Lapham Blevins
Jeanne Goodall Collins
Julia Gliarmis Constantine
Carolyn Twiname MacLeod
Lucinda Cason Marder
Ida Olivia Mullins
Nancy Elizabeth Rudolph
Verda Belle Smith
Joseph Smith Whisonant

MASTER OF EDUCATION

Peggy Jean Brown
Mildred D. Durden
Judith Elizabeth Hill
Helen Ayers King
Charles Franklin Mullen, Jr.
Anne Carlton Perkins
Robert Albert Pittillo, Jr.
Cecile Hostetler Zunner

MASTER OF SCIENCE

David Bruce Young

DOCTOR OF EDUCATION

Cleet Clyde Cleetwood, B.S., Appalachian State Teachers College; M.A., University of North Carolina.
(Education) Dissertation: "Legal Liability for Injuries Sustained in a Public School Program of Interscholastic Athletics"

Walter Dean Power, A.B., Presbyterian College; LL.B., Atlanta Law School; M.Ed., Duke University.
(Education) Dissertation: "The Legal Status of the Public School Teacher of Georgia"

DOCTOR OF PHILOSOPHY

Robert Angus Bandeen, B.A., University of Western Ontario.
(Economics) Dissertation: "State Per Capita Automobile Expenditures and Income 1930, 1940, and 1950"

William Q. Beard, Jr., B.S., University of North Carolina.
(Chemistry) Dissertation: "The Ortho Substitution Rearrangement of Ortho, Meta, and Para Substituted Benzyltrimethylammonium Ions and of Certain Substituted Dibenzyldimethylammonium Ions"

Carl Beck, B.A., M.A., University of Pittsburgh.
(Political Science) Dissertation: "Contempt of Congress: A Study of the Prosecutions Initiated by the House Committee on Un-American Activities, 1945-1957"

Ernest George Beinhart, Jr., B.S., Pennsylvania State College; M.S., North Carolina State College.
(Botany) Dissertation: "Studies of the Influence of Temperature and Light Intensity Upon Certain Physiological Processes in White Clover"

Vereen McNeil Bell, B.S., Davidson College; A.M., Duke University.
(English) Dissertation: "Character and Point of View in Representative Victorian Novels"

Milton Perry Brown, B.A., Birmingham-Southern College; B.D., Louisville Presbyterian Seminary.
(Religion) Dissertation: "A Linguistic Analysis of the Longer Ignatian Corpus to Establish Criteria of Authenticity"

Charles Eugene Cain, B.S., University of North Carolina; A.M., Duke University.
(Chemistry) Disseration: "The Synthesis and Reactions of Derivatives of *Bis*-Acetylferrocene. Other Ferrocene Derivatives"

Enid Mona Campbell, B.Ec., University of Tasmania.
(Political Science) Dissertation: "John Austin and Jurisprudence in Nineteenth Century England"

William Maury Cannon, Jr., B.A., Birmingham-Southern College; A.M., Duke University.
(Psychology) Dissertation: "A Study of the Responses of Blind and Sighted Individuals to the Kuder Preference Record"

Chang-boh Chee, B.A., North Central College; A.M., Duke University.
(Sociology) Dissertation: "Development of Sociology in Japan: A Study of Adaptation of Western Sociological Orientations into the Japanese Social Structure"

Barbara Ann Cooney, B.A., Rosemone College; A.M., Duke University.
(Chemistry) Dissertation: "The Polarographic Determination of Aluminum, Gallium, and Indium"

Monroe Joseph Cowan, B.S., University of Maryland.
(Physics) Dissertation: "Microwave Spectroscopy in the 0.5 to 1.5 Millimeter Wave Region: HI, DCl, DBr, DI, and CO"

Chicita F. Culberson, B.S., University of Cincinnati.
(Chemistry) Dissertation:
"I. 1, 2-DIHYDRO-*ENDO*-DICLYCLOPENTADIENE
II. 2-OXA-1, 2-DIHYDRODICLYCLOPENTADIENE
III. 2-AZA-1, 2-DIHYDRODICLYCLOPENTADIENE"

Loren Kenneth Davidson, A.B., Asbury College; M.A., University of Kentucky.
(English) Dissertation: "Whitman's 'Song of Myself' "

Murray Scott Downs, B.A., Randolph-Macon College; A.M., Duke University.
(History) Dissertation: "King, Ministers, and Parliament, 1774-1784"

Roland Scott Englehart, A.B., Davidson College.
(Psychology) Dissertation: "Semantic Correlates of Interpersonal Concepts and Parental Attributes in Schizophrenia"

Hugo Alfred Ferchau, B.S., College of William and Mary.
(Botany) Dissertation: "Ecotypic Variability of *Tsuga Canadensis:* Photosynthesis and Related Processes"

Robert Glenn Fessler, B.S., University of Chicago; M.S., University of Illinois.
(Chemistry) Dissertation: "Cation Exchange in Non Aqueous Systems and in Mixtures Containing Water"

Edward Flaccus, B.S., Haverford College; M.S., University of New Hampshire.
(Botany) Dissertation: "Landslides and Their Revegetation in the White Mountains of New Hampshire"

Auguste Forge, B.S., City College of New York.
(Mathematics) Dissertation: "Three Theorems in Dimension Theory"

Irving Jay Goffman, B.S., McGill University; A.M., Duke University.
(Economics) Dissertation: "Erosion of the Personal Income Tax Base in Canada and the United States"

Benjamin Franklin Graham, Jr., B.S., M.S., University of Maine.
(Botany) Dissertation: "Root-Grafts in Eastern White Pine, *Pinus Strobus* L: Their Occurrence and Ecological Implications"

Joseph Belknap Harris, A.B., Emory University; M.S., University of Georgia.
(Botany) Dissertation: "Studies on Changes in Plastids and Other Cell Particles During Greening of the Tobacco Leaf"

Thomas Munson Harris, B.S., University of Rochester.
(Chemistry) Dissertation: "Formation and Condensations of Some Dicarbanions Prepared by Means of Potassium Amide in Liquid Ammonia"

Eugene Warren Herron, B.S., Davidson College; A.M., Duke University.
(Mathematics) Dissertation: "Schaefli's Theorem"

Robert D. Higginbotham, A.B., M.A., Washington University.
(History) Dissertation: "Daniel Morgan: Revolutionary Soldier"

Mary Kathleen Martin Huse, B.A., M.A., University of North Carolina.
(Psychology) Dissertation: "Pursuit-Rotor Performance in the Brain-Damaged; The Role of Reactive and Conditioned Inhibition in Cortical Dysfunction"

Norman James, B.A., Yale University; A.M., University of Maryland.
(English) Dissertation: "Oscar Wilde's Dramaturgy"

Robert N. Kelson, A.B., M.A., Boston University.
(Political Science) Dissertation: "The Private Member of Parliament and the Formation of Public Policy: A New Zealand Case Study"

Edward John Kelty, B.A., Champlain College; M.Ps.Sc., McGill University.
(Psychology) Dissertation: "Normal Electrocortical Activity in Relation to Personality Factors"

Richard Austin King, A.B., M.A., University of Cincinnati.
(Psychology) Dissertation: "The Effects of Training and Motivation on the Components of a Learned Instrumental Response"

Phyllis Sally Kreinik, A.B., Cornell University.
(Psychology) Dissertation: "Parent-Child Themas and Concept Attainment in Schizophrenia"

Nosup Kwak, B.A., Wesleyan University.
(Mathematics) Dissertation: "Imbedding of Compact Metric Spaces in Cubes"

James Lynn Larimer, B.S., East Tennessee State Teacher's College; M.A., University of Virginia.
(Zoology) Dissertation: "Gas Transport Characteristics of the Blood of Mammals of Different Body Size"

Abe Forest Maxwell, B.S., Wake Forest College; A.M., Duke University.
(Chemistry) Dissertation: "The Jet Fluorination of Aliphatic Hydrocarbons as Oriented and Controlled by Operating Conditions"

William D. McCormick, B.S., California Institute of Technology.
(Physics) Dissertation: "Nuclear Magnetic Resonance in Solid Hydrogen at High Pressure"

Neville Kingsley Meaney, B.A., M.A., University of Adelaide.
(History) Dissertation: "The American Attitude Toward the British Empire from 1919 to 1922—A Study in the Diplomatic Relations of the English-Speaking Nations"

Kenneth Bruce Moser, B.S., Tusculum College.
(Chemistry) Dissertation: "New Polycyclic Systems Containing Nitrogen at a Bridgehead Position"

Kenneth Stanford Nickerson, B.A., King's College; M.A., Dalhousie University.
(Psychology) Dissertation: "The Relationship of Leveling-Sharpening Cognitive Controls and Manifest Anxiety to the Accuracy of Visual Size Judgments"

Roberta M. O'Dell, B.S., M.S., Pennsylvania State University.
(Zoology) Dissertation: "Studies on the Uptake of Urea by Frog and Mammalian Kidney Slices"

George Brown Oliver, B.A., Randolph-Macon College; A.M., Duke University.
(History) Dissertation: "A Constitutional History of Virginia 1776-1860"

Stewart Marshall Robinson, B.S., Union College.
(Mathematics) Dissertation: "Some Properties of the Fundamental Solution of the Parabolic Equation"

Roger E. Sappington, A.B., Manchester College; A.M., Duke University.
(History) Dissertation: "The Development of Social Policy in the Church of the Brethren"

Kenneth Lee Smith, A.B., University of Richmond; B.D., Crozer Seminary.
(Religion) Dissertation: "Shailer Mathews: Theologian of Social Process"

Thomas William Graham Solomons, B.S., The Citadel.
(Chemistry) Dissertation: "The Chemistry and Synthesis of Quinolizinium Benzologs"

Leslie Howard Sperling, B.S., University of Florida; A.M., Duke University.
(Chemistry) Dissertation: "Molecular Conformation of Cellulose Tricaproate in Solution"

John Jay TePaske, B.A., Michigan State University; A.M., Duke University.
(History) Dissertation; "The Governorship of Spanish Florida, 1700-1763"

William Fife Troutman, Jr., B.S., Western Carolina Teacher's College; A.M., Duke University.
(Political Science) Dissertation: "Respecting the Establishment of Religion in Colonial America"

Phillip Vincent Wells, B.A., Brooklyn College; M.S., University of Wisconsin.
(Botany) Dissertation: "On Ecological Investigation of Two Desert Species of *Nicotiana*"

Robert Craig Whitten, Jr., B.A., University of Buffalo; A.M., Duke University.
(Physics) Dissertation: "Double Beta-Decay With Incompletely Polarized Majorana Neutrinos"

William George Wilcox, B.A., Stanford University; B.D., Union Theological Seminary; M.A., Berkeley Baptist Divinity School.
(Religion) Dissertation: "New England Covenant Theology: Its English Precursors and Early American Exponents."

Bruce Walfred Von Zellen, A.B., North Michigan College; M.S., University of Michigan.
(Zoology) Dissertation: "Coccidiosis of Mice Belonging to the Host Genus *Peromyscus*"

ADVANCED DEGREES CONFERRED SEPTEMBER 1, 1959

MASTER OF ARTS

Edward P. Berger
Craven Allen Burris
Graciela C. Candelas
Mary Martin Davis
Jean Dickinson Gibbons
Julian R. Harrison, III
Christopher Henry Horsfield
Mary Ellen Jones
Robert Shields McIlwaine
Jane Stroud Mellon
William Jerome Mitchell
John Andrew Morgan
Francean G. Napoli
Norman laCour Olsen
Robert Vickers Shaver
Kenneth Judson Smith, Jr.
Phyllis Ann Stanbarger
Samuel Augustus Syme, Jr.
Frederick Randolph Vaughan

MASTER OF ARTS IN TEACHING

James Edward Bartal
Percy Levy Bernstein
Clarence Evans Boyd
William Arthur Cockell
Harold Joseph Cohen
John B. F. Dice
Thomas Irwin Edgar
Leonard F. Freiburghouse
Marydale Marsh Gray
Nancy Elizabeth Hildebrand
Phyllis Daphene Rankin Lintz
Jesse Samuel McClure
JoAnne McLawhorn
Sue B. Morris
John Jordan Morrow
Vincent Luis Rodriguez
Emery Roughton
Wesley Ryals
Sarah Searcy
Gail Joyce Schoenborn
Evelyn Louise Smith
Webster Zeeland Smith
Frederick G. Stritzinger
Stephen Noel Tackney
Joyce F. Wasdell
Katherine Anne Wenger

MASTER OF EDUCATION

Donald Douglas Abernethy
Romaine Barnes
Helen Moore Britton
Betty Cathey Brunson
Louise Sullivan Cooper
Mabel Elliott
William Elmore
Wilbur Gobrecht
Sarah Anne Hollar
Mary Frances McSwain
Mary Gail Mossor
Martha Anne Owen
Fallie Doris Page
Dorothy Evelyn Schmidt
Austin J. Simpson
Elizabeth Sorrell Thompson
Elinor Lucie Tuckwiller

MASTER OF SCIENCE

Jehangir Farhad Mirza

DOCTOR OF EDUCATION

Roman Romeo B. Calica, Jr., B.S., A.B., M.A., Union College of Manila; A.M., Howard University.
(Education) Dissertation: "A Study of the Practices Relating to the Evaluation of Student Progress in the Public High Schools of the Philippines"

DOCTOR OF PHILOSOPHY

Charles Miller Butter, A.B., Harvard University.
(Psychology) Dissertation: "Stimulus Generalization and Discrimination Along the Dimensions of Wavelength and Angular Orientation"

Mary Eleanor Craig, B.A., M.A., University of North Carolina.
(Economics) Dissertation: "Recent History of the North Carolina Furniture Manufacturing Industry with Special Attention to Locational Factors"

Richard Marshall Dunham, B.A., University of South Carolina.
(Psychology) Dissertation: "Sensitivity of Schizophrenics to Parental Censure"

James Charles Finlay, A.B., Loyola University of Chicago; M.A., Georgetown University.
(Political Science) Dissertation: "Charles de Montalembert and the Decline of Liberal Catholicism"

Fred M. Gottheil, B.A., McGill University; A.M., Duke University.
(Economics) Dissertation: "The Economic Predictions of Karl Marx: An Examination of Marxian Economic Theory"

Louis Frederick Hass, B.S., University of Scranton; M.S., Bucknell University.
(Biochemistry) Dissertation: "The Enzymatic Dephosphorylation of Glucose-6-Phosphate and Fructose-1, 6-Diphosphate"

William Henry Nelles Hull, B.A., Western Ontario University.
(Political Science) Dissertation: "A Comparative Study of the Problems of Ministerial Responsibility in Australian and Canadian Broadcasting"

Victor Hobbs Hutchison, B.S., North Georgia College; A.M., Duke University.
(Zoology) Dissertation: "Critical Thermal Maxima in Salamanders"

Kyozi Kawasaki, B.S., M.S., Kyushu University.
(Physics) Dissertation: "The Statistical Mechanics of Irreversible Processes"

Saul Michael Levin, B.A., Swarthmore College.
(Psychology) Dissertation: "The Effects of Awareness on Verbal Conditioning"

Eugene J. M. Lynch, B.A., Cornell University; A.M., Duke University.
(Physics) Dissertation: "Light Scattering from Liquid Helium"

M. S. Mahaley, Jr., B.S., Wake Forest.
(Anatomy) Dissertation: "The *InVitro-InVivo* Screening of Drugs for, and Their Use with, Expra Corporeal Regional Cancer Chemotherapy"

David Royal Moorefield, B.A., Presbyterian College; B.D., Columbia Theological Seminary; Th.M., Princeton Theological Seminary.
(Religion) Dissertation: "The Christology of Wilhelm Herrman"

P. S. K. Murty, A.M., Duke University.
(Sociology) Dissertation: "A Sociological Study of Workers' Participation in the Joint Consultation Scheme of Indian Industries"

William B. Novoa, B.S., University of Florida.
(Biochemistry) Dissertation: "A Study of Some Inhibitors of Lactic Dehydrogenase"

Rena J. Ratte, B.A., University of Maine; A.M., Duke University.
(Philosophy) Dissertation: "George Berkeley's Theory of Language"

Harold J. Schultz, A.B., Goshen College; M.A., University of Michigan.
(History) Dissertation: "William Aberhart and the Social Credit Party: A Political Biography"

Philip Bruce Secor, A.B., Drew University; A.M., Duke University.
(Political Science) Dissertation: "Richard Hooker and the Christian Commonwealth"

John David Taylor, A.B., Rutgers University.
(Psychology) Dissertation: "The Meaningfulness of Three Hundred and Twenty Words and Paralogs"

Joseph Wells, B.S., University of Rhode Island.
(Anatomy) Dissertation: "The Autoradiographic Distribution of DI-Cystine-S-35 in Normal and Water-Deprived Adult Rats"

William Rowland Wisseman, B. Nuc. Eng., North Carolina State College.
(Physics) Dissertation: "Coulomb Excitation of Germanium and Selenium"

BULLETIN
OF
DUKE UNIVERSITY

ENGINEERING

THE UNDERGRADUATE COLLEGE
THE GRADUATE PROGRAM

ANNOUNCEMENTS FOR 1960-1961

VOLUME 32 February, 1960 NUMBER 4-B

Annual Bulletins of Duke University

For Bulletin of Information for Prospective Students, apply to *The Registrar,* Duke University, Durham, N. C.

For Bulletin of Undergraduate Instruction, apply to *The Registrar,* Duke University, Durham, N. C.

For Bulletin of Engineering, apply to *The Registrar,* Duke University, Durham, N. C.

For Bulletin of The Graduate School of Arts and Sciences, apply to *The Dean of the Graduate School,* Duke University, Durham, N. C.

For Bulletin of The School of Forestry, apply to *The Dean of the School of Forestry,* Duke University, Durham, N. C.

For Bulletin of The School of Law, apply to *The Dean of the School of Law,* Duke University, Durham, N. C.

For Bulletin of The School of Medicine, apply to *The Dean of the School of Medicine,* Duke University, Durham, N. C.

For Bulletin of The School of Nursing, apply to *The Dean of the School of Nursing,* Duke University, Durham, N. C.

For Bulletin of The Divinity School, apply to *The Dean of the Divinity School,* Duke University, Durham, N. C.

For Bulletin of The Summer Session, apply to *The Director of the Summer Session,* Duke University, Durham, N. C.

For General Bulletin of Duke University, apply to *The Registrar,* Duke University, Durham, N. C.

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ENGINEERING

THE UNDERGRADUATE COLLEGE
THE GRADUATE PROGRAM

1959-1960
ANNOUNCEMENTS FOR 1960-1961

DURHAM, NORTH CAROLINA
1960

Calendar of the College

1960

September 15. Thursday, 7:30 p.m. Orientation begins: assemblies for all new students entering Trinity College, the Woman's College, and the College of Engineering.

September 19. Monday. Registration and matriculation of all students of Trinity College, the Woman's College, and the College of Engineering who have not pre-registered.

September 21. Wednesday. Final registration of pre-registered students.

September 22. Thursday, 8:10 a.m. Fall semester classes begin.

November 5. Saturday. Last day for reporting mid-semester grades.

November 23. Wednesday, 12:30 p.m. Thanksgiving recess begins.

November 28. Monday, 8:10 a.m. Classes are resumed.

December 11. Sunday. Founders' Day.

December 17. Saturday, 12:30 p.m. Christmas recess begins.

1961

January 3. Tuesday, 8:10 a.m. Classes are resumed.

January 14. Saturday, 12:30 p.m. Fall semester classes end.

January 17. Tuesday. Final examinations begin.

January 27. Friday. Final examinations end.

Jaunary 31. Tuesday. Registration and matriculation of new students.

February 1. Wednesday. Last day for matriculation for the spring semester.

February 2. Thursday, 8:10 a.m. Spring semester classes begin.

March 15. Wednesday. Last day for reporting mid-semester grades.

March 25. Saturday, 12:30 p.m. Spring recess begins.

April 4. Tuesday, 8:10 a.m. Classes are resumed.

May 18. Thursday, 5:00 p.m. Spring semester classes end.

May 20. Saturday. Final examinations begin.

May 31. Wednesday. Final examinations end.

June 3. Saturday. Commencement begins.

June 4. Sunday. Commencement Sermon.

June 5. Monday. Graduating Exercises.

For calendar of The Graduate School, refer to *Bulletin of the Graduate School of Arts and Sciences.*

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Officers of the College

General Administration

Arthur Hollis Edens, Ph.D., LL.D., *President of the University*

Paul Magnus Gross, Ph.D., *Vice-President in the Division of Education*

Charles Edward Jordan, A.B., LL.D., *Vice-President in the Division of Public Relations*

Herbert James Herring, M.A., LL.D., *Vice-President in the Division of Student Life*

Marcus Edwin Hobbs, Ph.D., *Dean of the University*

Alfred Smith Brower, A.B., *Treasurer*

Gerhard Chester Henricksen, A.M., C.P.A., *Business Manager and Comptroller*

John Marion Dozier, A.B., *Secretary*

Engineering Administration

Walter James Seeley, M.S., *Dean and Director of Research and Development*

Alan Krebs Manchester, Ph.D., *Assistant to the Vice-President in the Division of Education*

Allan Murray Cartter, Ph.D., *Dean of The Graduate School of Arts and Sciences*

Charles Eugene Ward, Ph.D., *Dean of Undergraduate Instruction*

Edward Kready Kraybill, M.S.E., *Assistant to the Dean of Engineering*

Robert B. Cox, A.M., *Dean of Undergraduate Men*

Richard Lovejoy Tuthill, Ed.D., *University Registrar*

Everett Broadus Weatherspoon, A.B., *Director of Admissions, Trinity College and College of Engineering*

Robert Seaman Rowe, D.Eng., *Chairman and Director of Graduate Studies, Department of Civil Engineering*

Charles Rowe Vail, Ph.D., *Chairman and Director of Graduate Studies, Department of Electrical Engineering*

John Nelson Macduff, M.M.E., *Chairman and Director of Graduate Studies, Department of Mechanical Engineering*

Faculty Emeritus

Harold Crusius Bird, Ph.B., C.E., *Professor Emeritus of Civil Engineering*

William Holland Hall, A.M., M.S.C.E., *J. A. Jones Professor Emeritus of Engineering*

Ralph Sydney Wilbur, M.E., *Professor Emeritus of Mechanical Engineering*

Frank Nicholas Egerton, A.M., E.E., *Associate Professor Emeritus of Electrical Engineering*

Instructional Staff

FACULTY

Kiro Pete Arges (1953), M.S. in C.E., *Assistant Professor of Civil Engineering*

John Leslie Artley (1955), D.Eng., *Associate Professor of Electrical Engineering*

Thomas Allan Boyle (1957), M.S. in M.E., *Associate Professor of Mechanical Engineering*

Gale Herbert Buzzard (1956), B.S. in M.E., *Instructor in Mechanical Engineering*

Donald Amos Calleson (1955), B.S. in M.E., *Instructor in Mechanical Engineering*

*David Powley DeWitt (1957), M.S. in M.E., *Instructor in Mechanical Engineering*

Ernest Elsevier (1950), M.S. in M.E., *Associate Professor of Mechanical Engineering*

William Henry Gardner, Jr. (1953), M.Eng., *Associate Professor of Civil Engineering*

Rhett Truesdale George, Jr. (1957), M.S.E., *Assistant Professor of Electrical Engineering*

Howard N. Haines (1943), B.S., *Assistant Professor of Civil Engineering*

Paul Harrawood (1956), M.S. in C.E., *Assistant Professor of Civil Engineering*

Clyde Nelson Holland (1957), B.S.C.E., *Instructor in Civil Engineering*

Van Leslie Kenyon, Jr. (1945), M.M.E., *Professor of Mechanical Engineering*

Edward Kready Kraybill (1939), M.S.E., *Associate Professor of Electrical Engineering, Assistant to the Dean of Engineering*

Sudhir Kumar (1958), Ph.D., *Visiting Lecturer in Civil Engineering*

Ralph Elton Lewis (1941), M.S. in M.E., *Assistant Professor of Mechanical Engineering*

John Nelson Macduff (1956), M.M.E., *Professor of Mechanical Engineering, Chairman, Department of Mechanical Engineering*

James Thomas McKeel (1956), B.E.E., *Instructor in Electrical Engineering*

Otto Meier, Jr. (1934), Ph.D., *Professor of Electrical Engineering*

Alexander William Molina (1956), B.S. in C.E., *Part-time Instructor in Civil Engineering*

Thomas Hawkes Nash, Jr. (1959), B.S., *Instructor in Mechanical Engineering*

†Daniel Alexander Okun (1957), Ph.D., *Visiting Lecturer in Civil Engineering*

Billy Brown Olive (1957), B.S. in E.E., LL.B., *Part-time Instructor in Electrical Engineering*

Harry Ashton Owen, Jr. (1951), M.S.E., *Associate Professor of Electrical Engineering*

Aubrey Edwin Palmer (1944), B.S. in Eng., C.E., *Associate Professor of Civil Engineering*

Robert Seaman Rowe (1956), D.Eng., *J. A. Jones Professor of Civil Engineering, Chairman, Department of Civil Engineering*

Walter James Seeley (1925), M.S., *James B. Duke Professor of Electrical Engineering, Dean and Director of Research, College of Engineering*

Harold Patty Stephenson (1957), Ph.D., *Associate Professor of Mechanical Engineering*

Kenneth John Tharp (1953), B.S. in C.E., *Assistant Professor of Civil Engineering*

* Resigned Aug. 31, 1959.
† Spring semester only.

Charles Rowe Vail (1939), Ph.D., *Professor of Electrical Engineering, Chairman, Department of Electrical Engineering*

*John Marcellus Vilas (1957), A.B., B.S. in E.E., *Instructor in Electrical Engineering*

James Wesley Williams (1937), M.S., *Professor of Civil Engineering*

Thomas George Wilson (1959), Sc.D., *Associate Professor of Electrical Engineering*

David Bruce Young (1956), M.S., *Instructor in Electrical Engineering*

PART-TIME INSTRUCTORS

Ozer Arnas (1958), B.S. in M.E., *Mechanical Engineering*

Tuncer Cebeci (1959), B.S. in E.E., B.S. in M.E., *Mechanical Engineering*

Henry Nathaniel Dorris (1958), B.A., *Electrical Engineering*

Arsev Eraslan (1959), M.S. in M.E., *Mechanical Engineering*

Hsueh-Chien Fu (1958), B.S., *Civil Engineering*

John Spellman Glenn (1959), B.S. in M.E., *Mechanical Engineering*

Syed Hasan (1958), B.S. in M.E., *Mechanical Engineering*

Leonidas John Jones (1958), B.S. in E.E., *Electrical Engineering*

Jehangir Farhad Mirza (1957), M.S. in C.E., *Civil Engineering*

Carl Duncan Parker (1959), B.E.E., *Electrical Engineering*

Theo Clyde Pilkington (1958), B.E.E., *Electrical Engineering*

Jack Edward Rathmell (1959), B.S. in E.E., *Electrical Engineering*

Sina Hasen Serinken (1959), B.S. in C.E., *Civil Engineering*

Wilber Clarence Stewart (1958), B.S. in E.E., *Electrical Engineering*

Gurkan Unal (1959), B.S. in C.E., *Civil Engineering*

Frank Thomas Wooten III (1959), B.S. in E.E., *Electrical Engineering*

Instruction in non-engineering subjects is given by members of the General Faculty.

RESEARCH ASSOCIATES

Michael Stephen Patrick Lucas (1959), Cert. City and Guilds of London Inst., *Electrical Engineering*

Franz K. Weddeling (1958), Dipl. Phys., Dr. Ing., *Mechanical Engineering*

RESEARCH ASSISTANTS

Agustin Diaz (1958), B.S. in M.E., *Mechanical Engineering*

Chi-Yu King (1958), B.S. in E.E., *Electrical Engineering*

Liou-Min Leu (1958), B.E., *Civil Engineering*

Armagan Sanver (1958), B.S. in C.E., *Civil Engineering*

Staff

Mrs. George F. Kale, *Librarian*

Mrs. Dorothy Holt McElduff, A.B., *Recorder and Secretary to the Dean*

Mrs. Leon S. Brooks, *Secretary, Electrical Engineering Department*

Mrs. Gerald P. Cantini, A.B., *Secretary, Civil Engineering Department*

* Resigned August 31, 1959.

Mrs. Winston E. Crabtree, *Secretary, Mechanical Engineering Department*
Mrs. Robert L. Fortune, *Secretary, Dean's Office*
Lester Barham, *Laboratory Technician in Electrical Engineering*
William Glenwood Clayton, *Laboratory Technician in Mechanical Engineering*
Joseph Philip Edwards, *Laboratory Technician in Electrical Engineering*
Alonzo George Vaughan, *Laboratory Technician in Civil Engineering*
James Edgar Grasty, *Technician Assistant in Mechanical Engineering*

ENGINEERING FACULTY COUNCIL

Chairman: Dean W. J. Seeley
Secretary: E. B. Weatherspoon
Assistant to the Dean: E. K. Kraybill
Civil Engineering: R. S. Rowe, J. W. Williams
Electrical Engineering: C. R. Vail, Otto Meier, Jr.
Mechanical Engineering: J. N. Macduff, V. L. Kenyon, Jr.
English: G. C. Harwell
Mathematics: F. G. Dressel
Physics: H. W. Lewis
Ex-officio: President A. H. Edens
Vice-President P. M. Gross
Dean M. E. Hobbs
Dean C. E. Ward

COMMITTEE OF THE BOARD OF TRUSTEES ON ENGINEERING AND RESEARCH

E. L. Jones, B. E. Jordan, A. H. Sands, Jr., N. A. Cocke

FACULTY COMMITTEES

Building: Kraybill, Haines, Macduff, Rowe, Seeley, Vail
Bulletin: Kraybill, Harwell, Nash, Vail, Williams
Engineering Publications: Harrawood, Artley, Boyle, Harwell
Executive: Seeley, Kraybill, Macduff, Rowe, Vail, Ward
Faculty Program: Rowe, Lewis, Olive
Freshman Advisory: Kraybill, Artley, Buzzard, Calleson, Elsevier, George, Haines, Lewis, Owen, Rowe, Tharp
Graduate Program: Seeley, Macduff, Rowe, Vail
Lecture: Kenyon, Holland, Meier
Library: Stephenson, George, Harrawood, Kale
Schedule: Kraybill, Elsevier, Macduff, McElduff, McKeel, Williams
Student Activities: Kraybill, Artley, Elsevier, Holland, Meier, Stephenson, Tharp
Representatives to Undergraduate Faculty Council: Artley, Elsevier, Kraybill, Macduff, Rowe, Seeley, Tharp, Vail
Upperclass Advisers: Boyle, Gardner, Harrawood, Kenyon, McKeel, Meier, Olive, Stephenson, Williams, Young

Engineering Programs

General Information

ENGINEERING instruction at Duke University is offered through the College of Engineering and the Graduate School of Arts and Sciences.

The College of Engineering, through its component Departments of Civil, Electrical, and Mechanical Engineering, offers fully accredited programs leading to the degrees of Bachelor of Science in Civil, Electrical, and Mechanical Engineering. Each of the undergraduate curricula requires 148 semester hours of work, four of which are in physical education.

Through the Graduate School of Arts and Sciences, work is offered leading to the degree of Master of Science with a major in civil, electrical, or mechanical engineering. The Master's program requires 30 units of graduate work: 24 units of course work and a research-based thesis carrying 6 units of credit.

The educational philosophy behind all the programs is to graduate prospective engineers who are not only well grounded in the science and art of their profession, but also responsible members of society.

History

The College of Engineering traces its origin to 1887, when instruction in engineering subjects was begun by Trinity College. After the establishment of Duke University, the program in engineering rapidly evolved to its present status through a series of steps that included the formation of separate departments in civil and electrical engineering in 1927, the formation of a separate department in mechanical engineering in 1931, the establishment of the Division of Engineering in 1937, and finally, the incorporation of this Division into the University structure in 1939 as the College of Engineering, one of the three coordinate undergraduate colleges of Duke University. The Master of Science degree with a major in engineering offered through the Graduate School was authorized in 1956.

Relationship to the University

As a part of the University community, the College of Engineering serves its students as the focus of a total educational experience that only a major university can provide. It shares the same campus with

Trinity College, the Graduate School of Arts and Sciences, the Divinity School, and the Schools of Law, Nursing, Medicine, and Forestry. The facilities for library, laboratory, and field work and the many activities—religious, intellectual, cultural, and athletic—form part of the environment by which an engineering student is conditioned. Thus he may enjoy simultaneously the broad facilities and challenges of a university and the life and atmosphere of a small college.

Undergraduate Program

The aim of undergraduate engineering education at Duke is to provide an atmosphere in which the student will be motivated to acquire knowledge and understanding in those areas of human endeavor that will equip him for a career in his chosen profession. The program stresses the development of intellectual power and provides a broad scientific background that incorporates the engineering viewpoint. It is designed to enable the student to develop technical knowledge, skill, and judgment and to stimulate an interest in the study of the humanities. Among the values of such a program is the stimulus for a student to evolve a personal philosophy that will prepare him for his responsibilities as a professional person and as a citizen. Both on the campus and in the classroom the emphasis is on the individual. To this end classes are kept small and close contact is maintained between professor and student.

Detailed information for prospective students can be found in the bulletin INFORMATION FOR PROSPECTIVE STUDENTS, available through the Registrar, Duke University, Durham, N. C.

Liberal Arts-Engineering Combined Program

To facilitate and encourage the combining of a maximum of liberal arts studies with professional training, the College of Engineering has developed a special plan of cooperation with approved liberal arts colleges. Under this "three-two" plan, an outstanding student may follow an approved program of study at the cooperating liberal arts college for an initial period of three years and then come to Duke University to complete his studies at the College of Engineering in two more years. At the end of the total period of five years, a degree is granted by the cooperating liberal arts college, and a degree of Bachelor of Science in the appropriate branch of Engineering by Duke University. The following institutions are currently associated with the Duke University College of Engineering in this plan: American University, Washington, D. C.; Davidson College, Davidson, N. C.; Elon College, Elon, N. C.; Illinois Wesleyan University, Bloomington, Illinois; John B. Stetson University, Deland, Fla.; Middlebury College, Middlebury, Vt.; Wake Forest College, Winston-Salem, N. C.; Wof-

ford College, Spartanburg, S. C.; Methodist College, Fayetteville, N. C.

Inquiries concerning this plan should be addressed to the Dean, College of Engineering, Duke University, Durham, North Carolina.

Graduate Program

Through the Graduate School of Arts and Sciences, the three departments which constitute the College of Engineering offer work leading to the Master of Science degree with a major in civil, electrical, or mechanical engineering. Half-time instructorships are available to qualified graduate students who need financial assistance. A holder of one of these instructorships may carry three fifths of a normal load of graduate courses.

Further information is available from the chairmen of the respective departments. Bulletins and admission application forms are available from the Dean, Graduate School of Arts and Sciences, Duke University, Durham, North Carolina.

Organization

The affairs of the College of Engineering are administered by the Dean of the College, with the assistance of an Executive Committee which includes the Chairmen of the three Departments of Engineering, the Assistant to the Dean, and the Dean of Undergraduate Instruction of the University. The legislative body of the College is the Engineering Faculty Council, which has responsibility for the curriculum and for determining policies in those educational, professional, and administrative matters that pertain exclusively to the College of Engineering. The affairs of each Department of Engineering are administered by the Chairman of that Department, with the assistance of the Department Faculty. Much of the administrative work of the College is carried out by committees.

The graduate programs are administered by the respective engineering departments through the Graduate School of Arts and Sciences.

Physical Plant

The College is on the West Campus in a building that was first occupied in January 1948. Each of three wings houses the laboratories and the special classrooms of one of the three engineering departments. The main portion of the building has offices, classrooms, and other general facilities including a library of some 27,500 volumes and over 300 periodicals; an auditorium, where audio-visual instruction can be given to large groups; a conference room; a student lounge; photographic dark rooms; mimeographing and blueprinting facilities; and drafting rooms.

Admission

Undergraduate

CANDIDATES may qualify for admission to the College of Engineering as members of the freshman class or as students with advanced standing. Since the enrollment is limited, the Committee on Admissions selects students who, in its judgment, are best qualified to benefit from the educational advantages which the College offers. The Committee bases its decision primarily on the academic record of the candidate, on test scores, and on satisfactory evidence of good character and general fitness for college life at Duke. A personal interview with an officer of the Admissions Office is welcomed and a visit to the campus is of material benefit to the candidate.

ADMISSION TO THE FRESHMAN CLASS: A candidate for admission to the freshman class must present at least 15 acceptable units of secondary school credit. A minimum of 12 units in college preparatory subjects must be presented, but it is recommended that 15 be offered. *For admission to the College of Engineering* candidates are advised to present four units of mathematics and at least one unit in physics or chemistry. Subjects classified as college preparatory are English, foreign languages, history and social studies, mathematics and sciences.

All candidates for admission to the freshman class are required to take the Scholastic Aptitude Test of the College Entrance Examination Board. In addition, it is recommended that all engineering candidates take the Advanced Mathematics Achievement Test of the College Entrance Examination Board in March of the senior year in secondary school. Details of the procedure to be followed in complying with this requirement will be sent to each candidate for admission.

ADMISSION TO ADVANCED STANDING: A candidate for admission to advanced standing must have fulfilled the equivalent of the requirements for admission to the freshman class, must present official transcripts of all work completed in other institutions, and must have an honorable dismissal from each institution previously attended. Advanced standing candidates who have previously taken the Scholastic Aptitude Test and any achievement tests of the College Entrance Examination Board should request the Board to send a report of their test scores to the Director of Admissions. All others are required to

take the Scholastic Aptitude Test and request the Board to send their scores to the Admissions Office.

Credit for work completed at other institutions will be determined in relation to the curriculum requirements of the College of Engineering.

Credit for courses in science offered for advanced standing by a transfer from a junior college will be determined by the departments concerned.

The maximum amount of credit acceptable from a junior college is 60 semester hours, exclusive of physical education. No credit is given for work completed by correspondence, and credit for no more than six semester hours is allowed for extension courses. Any extension work accepted must be specifically approved by the Dean of the College.

ADVANCED PLACEMENT AND CREDIT: Placement in advanced sections of freshman courses, or in courses beyond the freshman level, with or without credit, may be approved on the basis of tests administered at the University during Orientation Week or from the results of the Advanced Placement Program of the College Entrance Examination Board. The undergraduate departments of instruction and the Freshman Office are charged with the responsibility for evaluations leading to advanced placement of freshman matriculants.

ADMISSION OF SPECIAL STUDENTS: Students of mature age may be admitted for special work in such courses of instruction as they are qualified to take. They may not be admitted as candidates for a degree in a regular course unless they meet all normal requirements for admission.

READMISSION OF FORMER STUDENTS: A student who, following withdrawal from the College, desires to return should apply to the Registrar, and send a detailed statement of his activities since leaving Duke University.

ADMISSION PROCEDURE: Application for admission to the College of Engineering should be made to the Registrar, Duke University, Durham, North Carolina. Application forms and instructions will be sent to the candidate. It is the responsibility of the candidate to see that these forms are properly executed and, together with other requested material, sent promptly to the Office of Admissions. A non-refundable processing fee of $10.00 must accompany the official application form.

Application prior to the final year of the secondary-school course is not required. Formal steps looking toward admission should be initiated, however, early in the senior year and not later than Feb-

ruary 1. Candidates for admission are requested to file all credentials by March 1. Candidates will be notified as decisions are made.

WOMEN STUDENTS: Women students enrolled in the College of Engineering live on the Woman's College campus and are subject to the general regulations of the Woman's College.

Graduate

PREREQUISITES: A student seeking admission to the Graduate School of Arts and Sciences of Duke University with a major in engineering must normally have received a Bachelor's degree from an accredited engineering institution. His undergraduate program should be well rounded and of such quality as to give positive evidence of capacity for graduate study.

STUDENTS REQUIRING ADMISSION: Admission is required of (1) all students who intend to pursue study toward a degree offered by the Graduate School, (2) all other students who desire credit for whatever purpose for graduate courses—except students who register only in the Summer Session.

PROCEDURE FOR ALL APPLICANTS: A student seeking admission to the Graduate School should request the Dean of the Graduate School to send an application blank. This he should fill out completely and return promptly. In addition he should provide the following supporting documents: (1) a transcript or transcripts of all his undergraduate and graduate work mailed directly by the Registrar to the Dean; (2) as soon as possible, supplementary transcripts showing completion of work not completed when the earlier transcript was made; (3) three letters of recommendation written by persons best qualified to judge him as a prospective graduate student and mailed directly to the Dean; (4) scores on the aptitude and major subject Graduate Record Examinations, always acceptable to strengthen the application and always to be reported if the examinations have been taken.

For complete admission requirements consult the *Bulletin of the Graduate School of Arts and Sciences,* which may be obtained by writing to the Dean, Graduate School of Arts and Sciences, Duke University, Durham, North Carolina.

The Degree of Bachelor of Science in Engineering

STUDIES in the College of Engineering are designed for students who are preparing for civil, electrical, or mechanical engineering as a profession and lead to the following degrees: B.S. in C.E., B.S. in E.E., or B.S. in M.E. All curricula of the College are fully accredited by the Engineers' Council for Professional Development.

Uniform Requirements

Each of these degrees requires a minimum of 148 semester hours of work, four of which are in physical education.

The curriculum of each department consists of three components: (1) a freshman program common to all three departments, (2) certain general courses throughout the remaining three years, (3) special courses in the specific department. The special program of each department and a description of the courses it offers are given in the section of this Bulletin devoted to that department.

The Degree of Master of Science with a Major in Engineering

The Master's program in each of the three Departments of Engineering includes a minimum requirement of 30 units of graduate credit: 24 units of course work and a research-based thesis carrying 6 units of credit. Details of these programs are given in the section of this Bulletin that deal with those departments. Further information concerning general regulations for the Master's degree will be found in the *Bulletin of the Graduate School of Arts and Sciences.*

Department of Civil Engineering

Robert Seaman Rowe, Chairman
J. A. Jones Professor

James Wesley Williams
Professor

William Henry Gardner, Jr.
Associate Professor

Aubrey Edwin Palmer
Associate Professor

Kiro Pete Arges
Assistant Professor

Howard N. Haines
Assistant Professor

Paul Harrawood
Assistant Professor

Kenneth John Tharp
Assistant Professor

Clyde Nelson Holland
Instructor

Alexander William Molina
Instructor, Part-time

Hsueh-Chien Fu
Instructor, Part-time

Jehangir Farhad Mirza
Instructor, Part-time

Sina Hasen Serinken
Instructor, Part-time

Gurkan Unal
Instructor, Part-time

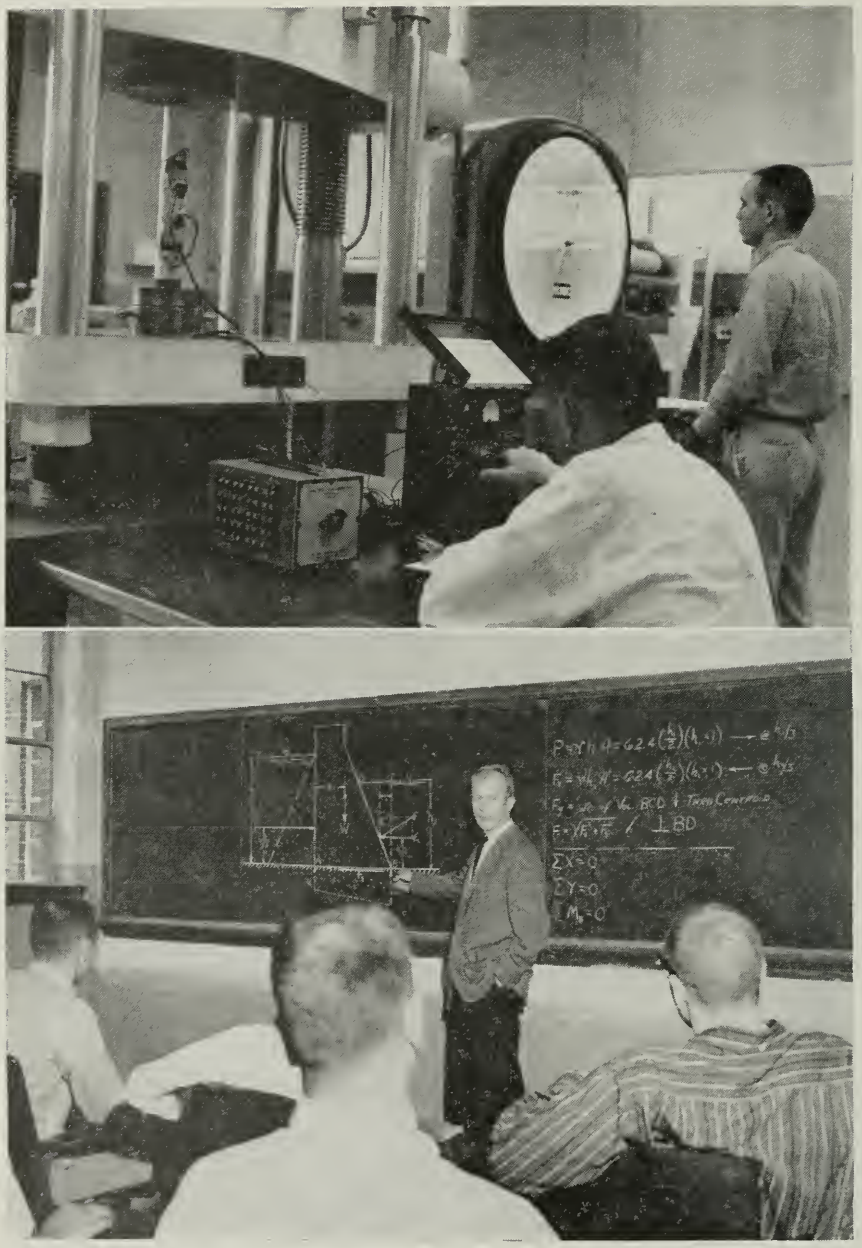
Sudhir Kumar
Visiting Lecturer

Daniel Alexander Okun
Visiting Lecturer

THE work of a civil engineer may be divided into four major fields: sanitation—public health, water supply, and waste disposal; hydraulics—flood control, river improvements, irrigation, drainage, and water power; transportation—railroads, highways, airports, waterways, park systems, traffic control, and city planning: structures—bridges, buildings, foundations, dams, tunnels, tanks, bins, and various industrial structures. The concern of a civil engineer is primarily with design and construction, although often his responsibility includes maintenance. His undergraduate education comprises scientific, technical, civic, and cultural subjects. In order that he may become qualified to assume responsible charge of engineering work, he must supplement this instruction with progressive study after he graduates and while he is securing his practical experience.

The various facilities of the department are described below.

The *Mechanics of Materials Laboratory* is equipped to give instruction in the basic principles of stress and strain and for the testing of structural members. Its facilities are adequate for both graduate and undergraduate instruction. Included in this laboratory are three universal testing machines with capacities from 5,000 to 400,000 pounds; various hardness testers; machines for testing torsion, fatigue,


ΣX=0
ΣY=0
ΣM_B=0

and impact; calibration apparatus; and a variety of modern strain gages of direct acting mechanical and electric-resistance types.

The Materials Laboratory has the equipment necessary for both engineering research and undergraduate instruction in the physical properties and stress-deformation characteristics of bituminous mixtures, concretes and soils.

For advanced instruction in *Stress Analysis* there are various polariscopes with facilities for taking and developing pictures, large-sized Begg's deformeter, loading frames, and miscellaneous tools for preparing accurate models for testing.

The department has an unusually modern and representative collection of *Surveying Equipment:* transits, levels, plane tables, accessory equipment, precise levels and theodolites.

In the *Sanitary Laboratory* there is complete equipment for performing the physical, chemical, bacteriological, and microscopic tests as outlined by the American Public Health Association.

Program of Studies for the Degree of Bachelor of Science in Civil Engineering

Freshman Year

FIRST SEMESTER			S.H.
Engrg	1	Engineering Drawing	2
Engl	1	English Composition	3
Hist	E1	U. S. in World Today	3
Math	21	Introductory Calculus	3
Phys	41	General Physics	4
Approved Elective			3
PE		Physical Education	1
			19

SECOND SEMESTER			S.H.
Engrg	2	Descriptive Geometry	2
Engl	2	English Composition	3
Hist	E2	U. S. in World Today	3
†Math	22	Introductory Calculus	3
Phys	42	General Physics	4
Approved Elective			3
PE		Physical Education	1
			19

Sophomore Year

FIRST SEMESTER			S.H.
Chem	1	Gen. Inorg. Chemistry	4
†CE	61	Surveying	5
Econ	51	Principles of Economics	3
Engrg	57	Statics	3
Math	63	Intermediate Calculus	3
PE		Physical Education	1
			19

SECOND SEMESTER			S.H.
Chem	2	Gen. Inorg. Chemistry	4
CE	72	Materials Laboratory I	1
Econ	52	Principles of Economics	3
†Engrg	107	Mechanics of Materials	3
Engrg	109	Materials Laboratory	1
Engl	E93	Written and Oral Communication	3
Math	64	Intermediate Calculus	3
PE		Physical Education	1
			19

Junior Year

FIRST SEMESTER			S.H.
CE	101	Materials Laboratory II	1
CE	113	Route Surveying	3
†CE	131	Structural Mechanics I	3
CE	135	Soils Mechanics	2
Engrg	115	Dynamics	3
*Electives			6
			18

SECOND SEMESTER			S.H.
CE	118	Engineering Materials	2
CE	140	Structural Mechanics II	3
EE	123	Fundamentals of EE	3
EE	125	EE Fundamentals Lab	1
†Engrg	128	Fluid Mechanics	3
*Electives			6
			18

Senior Year

FIRST SEMESTER			S.H.
CE	123	Hydraulic Engineering	3
CE	132	Structural Design I	4
CE	137	Seminar	1
ME	103	Thermodynamics	3
ME	116	M. E. Laboratory	1
*Electives			6
			18

SECOND SEMESTER			S.H.
CE	116	Transportation Engrg	3
CE	124	Sanitary Engineering	3
CE	133	Structural Design II	4
CE	146	Professional Engineering	2
*Electives			6
			18

* Part of a program of twenty-four semester hours of electives planned with departmental approval to suit the interests and abilities of each student. The program will include Mathematics 111 or a prescribed course in geology; an additional nine semester hours in mathematics, the sciences, or technical subjects; and another nine semester hours in the humanities or the social sciences.

† Courses which must be passed before engineering academic standing can be advanced. (See page 50).

Program of Studies in Civil Engineering for the Degree of Master of Science

Through the Graduate School of Arts and Sciences, the Department of Civil Engineering offers work leading to the degree of Master of Science. As a prerequisite to graduate study the student normally must have been awarded a Bachelor's degree in an accredited engineering curriculum. Minimum prerequisites to the graduate courses in civil engineering are a knowledge of differential equations, mechanics of materials, structural theory and design, fluid mechanics, and location procedure.

The minimum requirement for the M.S. degree is satisfactory completion of 30 units of graduate work, as follows: 12 units in engineering, 12 units of minor work outside engineering (normally in mathematics and physics), and 6 units of credit for a research-based thesis in one of the following fields: foundation engineering; hydraulic engineering; structural engineering. There is no foreign language requirement.

Courses of Instruction

CE 61. PLANE SURVEYING.—Use and adjustment of instruments; transit-tape, stadia, and plane table surveying; differential and profile leveling; calculation of bearings, latitudes, departures, and areas; accuracy and errors; topographic mapping; rural and urban land surveys; celestial observations for azimuth; triangulation; introduction to photogrammetry. Prerequisites: Engrg. 1 and Math. 21. 3 s.h. Assistant Professor Tharp

CE 72. MATERIALS LABORATORY I.—Blending of granular materials and determinations of their physical properties, design of concrete and bituminous mixtures, consistency limits of soils. 1 s.h. Mr. Holland

CE 101. MATERIALS LABORATORY II.—Testing of soils, concrete, and bituminous mixtures. Mechanical analyses, compaction, consolidation, triaxial, and stability tests. Analysis of test results. Prerequisite: CE 72; concurrent: Engrg. 107. 1 s.h. Associate Professor Gardner

CE 8110. PLANE SURVEYING.—Use and adjustment of instruments; transit-tape, stadia, and plane table surveying; differential and profile leveling; calculation of bearings, latitudes, departures, and areas; accuracy and errors; mapping; celestial observations for azimuth; triangulation. Prerequisites: trigonometry; engineering graphics desirable. 4 s.h. Assistant Professor Tharp

CE 113. ROUTE SURVEYING.—Simple, compound, and reverse curves; parabolic curves; spirals; earthwork and grading plans; route location and selected problems in design. Prerequisite: CE 61. 3 s.h. Professor Williams

CE 116. HIGHWAY ENGINEERING.—Location, design, construction and maintenance of highways and city streets; soil stabilization; traffic studies; economics of planning and design. Prerequisite: CE 113, 135. 3 s.h. Professor Williams

CE 118. MATERIALS OF ENGINEERING.—Behavior of materials under load; mechanical properties as criteria for failure; elementary metallurgy. Ferrous and non-ferrous metals, timber, plastics, stone and clay products. Prerequisite: Engrg. 107 and Engrg. 109. 2 s.h. Assistant Professor Arges

CE 121. *HYDROLOGY.—Fundamentals of meteorology; precipitation; evaporation. Ground water development. Stream flow and stream gaging. Hydrograph analysis. Flood routing. Field trips to be arranged. Prerequisite: Engrg. 128. 3 s.h. Professor Williams

CE 123. HYDRAULIC ENGINEERING.—Pipe flow, compound pipe systems, network analysis, analysis and problems on pumps and turbines, fundamental aspects of hydrology. Open channel flow, non-uniform flow computations. Irrigation and drainage problems. Flood control and hydraulic structures. Prerequisite: Engrg. 128. 3 s.h. Professor Williams

CE 124. SANITARY ENGINEERING.—Public health and engineering aspects of water supply and waste disposal. Population estimation, storage requirements, supply and collection systems. Water and waste treatment, laboratory analyses and interpretation of results. Prerequisite: CE 123, Chemistry 2. 3 s.h. Dr. Okun

CE 131. STRUCTURAL MECHANICS I.—Stresses in trusses by algebraic and graphic methods under all conditions of loading. Structural drafting. Prerequisite: Engrg. 107. 3 s.h. Associate Professor Gardner

CE 132. STRUCTURAL DESIGN I.—Tension, compression, flexural members, eccentric connections, unsymmetrical bending, riveted and welded plate girders, trusses and office building frames. Timber design using ring connectors. Design and detail drawings. Prerequisite: CE 131. 4 s.h. Associate Professor Palmer

CE 133. STRUCTURAL DESIGN II.—Theory and design of reinforced concrete beams, columns, and footings. Analysis and design of arches and bents. Prerequisite: CE 140. 4 s.h. Professor Rowe

* Offered only upon demand; enrollment limited.

CE 135. SOIL MECHANICS.—Soil identification and classification; elementary soil physics; drainage; exploration; stability of footings and retaining walls; settlement; application of theory to foundation design. Prerequisite: Engrg. 107. 2 s.h.
ASSOCIATE PROFESSOR GARDNER

CE 137, 138. SEMINAR.—Students are required to make reports and to talk on current engineering literature or on such other topics as may be assigned. 1-2 s.h. STAFF

CE 140. STRUCTURAL MECHANICS II.—Application of least work, slope deflection, and moment distribution to statically indeterminate structures. Deflection of trusses. Prerequisite: CE 131. 3 s.h. ASSOCIATE PROFESSOR PALMER

CE 143, 144. PROJECTS IN CIVIL ENGINEERING.—This course may be assigned by the Chairman of the Department to certain seniors who have shown an aptitude for research in one distinct field of civil engineering, in which case it may be substituted for certain general civil engineering courses. 2-6 s.h. STAFF

CE 146. PROFESSIONAL ENGINEERING PROBLEMS.—Professional aspects of civil engineering practice. Selected problems in analysis and design, consideration of engineering economy, contracts, specifications, and ethics. Seniors only. 2-3 s.h.
ASSOCIATE PROFESSOR PALMER

CE 154.* GEOMETRIC THOROUGHFARE DESIGN.—Analysis and design of municipal street systems. Origin-destination surveys; control of traffic flow; grade, rotary, and grade-separation intersections. Prerequisite: CE 113. 3 s.h.
ASSISTANT PROFESSOR THARP

GRADUATE COURSES

PROFESSOR ROWE, CHAIRMAN AND DIRECTOR OF GRADUATE STUDIES; PROFESSOR WILLIAMS; ASSOCIATE PROFESSOR GARDNER

CE 201. THEORETICAL AND APPLIED MECHANICS.—Introduction to the theory of elasticity, vibrations analysis, and hydrodynamics. (Same course as ME 201.) 3 units. PROFESSORS ROWE AND MACDUFF

CE 202. ADVANCED MECHANICS OF MATERIALS AND EXPERIMENTAL STRESS ANALYSIS.—The analysis of stress and strain in deformable bodies, correlation of theory with data from experiment. Photoelasticity. Strain gages. Similitude. 3 units. PROFESSOR ROWE

CE 231. STRUCTURAL THEORY AND ANALYSIS.—The application of the fundamental theories of structural action to the design and analysis of structural members. The Gauss Scheme. Specifications. Planning of CE projects. 3 units.
PROFESSOR ROWE

CE 232. REINFORCED CONCRETE THEORY.—Design and analysis of reinforced concrete members including plates and shells. Prestressed and poststressed concrete members. 3 units. ASSOCIATE PROFESSOR GARDNER

CE 235. FOUNDATION ENGINEERING.—The theory and application of soil mechanics to the design and analysis of foundations, subsurface structures, and earth works. 3 units. ASSOCIATE PROFESSOR GARDNER

CE 242. HYDRAULIC ENGINEERING.—Fundamental principles of flow, effects of gravity, viscosity, compressibility, and surface tension of fluid motion in closed conduits and open channels; surface and form resistance; hydraulic similitude. Fundamentals of applied hydrology. 3 units. PROFESSOR WILLIAMS

CE 297, 298. THESIS.—Research relating to selected fields of study involving original work extending over two terms. A student with the proper background many carry on research under the direction of the staff in one of the following fields: foundation engineering; hydraulic engineering, and structural engineering. Thesis credit only. 6 units. ALL MEMBERS OF THE GRADUATE STAFF

* Offered only upon sufficient demand; enrollment limited.

Department of Electrical Engineering

Charles Rowe Vail, Chairman
Professor

Walter James Seeley
James B. Duke Professor

Otto Meier, Jr.
Professor

John Leslie Artley
Associate Professor

Edward Kready Kraybill
Associate Professor

Harry Ashton Owen, Jr.
Associate Professor

Thomas George Wilson
Associate Professor

Rhett Truesdale George
Assistant Professor

James Thomas McKeel
Instructor

Billy Brown Olive
Instructor, Part-time

David Bruce Young
Instructor

Henry Nathaniel Dorris
Instructor, Part-time

Leonidas John Jones
Instructor, Part-time

Carl Duncan Parker
Instructor, Part-time

Theo Clyde Pilkington
Instructor, Part-time

Jack Edward Rathmell
Instructor, Part-time

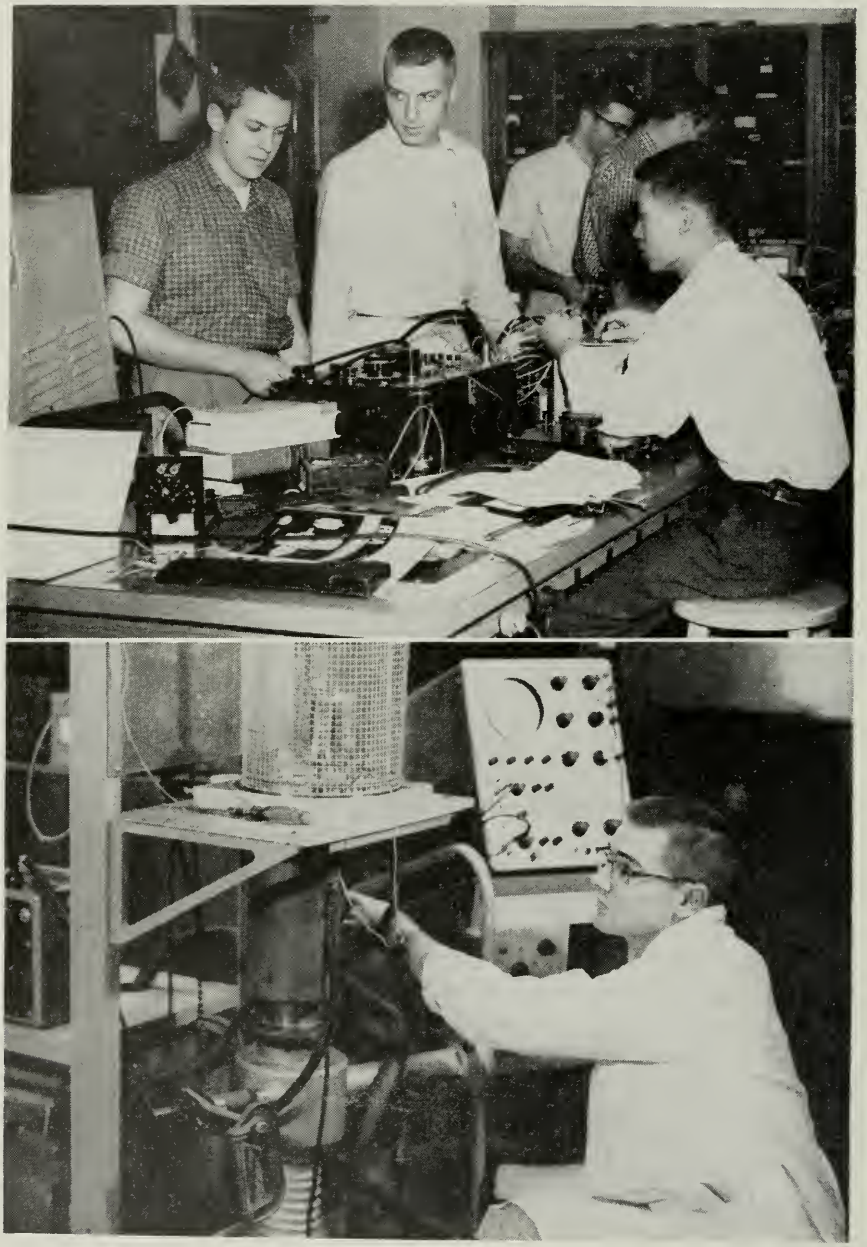
Wilber Clarence Stewart
Instructor, Part-time

Frank Thomas Wooten
Instructor, Part-time

ELECTRICAL ENGINEERING utilizes the electrical and magnetic forces of nature and properties of matter to supply human needs. To an increasing degree its products and services influence the daily living of most of the world's population. It is concerned with the *processing and transmitting of information*—as in radar, radio and wire telephony, measurement, electronics, computation, and control. It is equally concerned with the *processing, transmitting, and controlling of energy*—as in rotating machines, power systems, and automatic industrial processes. It provides most of our labor-saving home appliances and many of the instruments of modern scientific research and of modern medical practice.

The professional electrical engineer may engage in consulting, research and development, design and manufacturing, operation and maintenance, or management and sales. His education must therefore provide a fundamental understanding of both the science of electrical engineering, which is based on mathematics and the physical sciences, and the art of electrical engineering, which depends on human imagination and judgment. It must also prepare him to serve as a responsible member of society by providing him with an appreciation of the humanities and the social sciences.

The program in electrical engineering at Duke, therefore, does



not stress the mere acquisition of specific skills and methods, but seeks, in both classroom and laboratory, to stimulate students to think creatively in terms of fundamentals. It is hoped that, once started, creativity may become a habit.

Such a program requires an able staff, extensive library resources, and well-equipped laboratories, such as are found here. Some idea of the range of interests in electrical engineering which are included in this program may be conveyed by a brief survey of the laboratory activities of the Department.

In the *Fields and Circuits Laboratories* the configurations of two- and three-dimensional fields are studied by several different analog techniques. Complex network functions are studied by means of an electrolytic tank mapper. Nonsinusoidal waves are synthesized and analyzed, and oscillographic studies are made of both steady-state and transient behavior of direct-current circuits and single-phase and polyphase alternating-current circuits.

The *Electronics Laboratories* are equipped for the study of the physical behavior of basic electronic components and of advanced electronic devices throughout the sub-radio frequency region. An electronic analog computer is used to study the dynamic response of a variety of physical systems.

In the *Radio-Frequency Laboratory* studies are made of radio-frequency systems and their component parts throughout the radio-frequency spectrum. Applications to television and radar are shown.

In the *Electric Machinery Laboratory* the principles of large-scale energy conversion and control are studied. Transformers, a-c and d-c motors and generators, and their associated controls are included in this work.

In the *Automatic Control Laboratory* studies are made of the principles underlying the growing fields of instrumentation and automation.

The *Computer Laboratory* contains a general-purpose electronic analog computer. This device is capable of solving higher-order differential equations that are descriptive of the dynamic behavior of complex physical systems, such as are encountered in advance course-work and research projects.

The *High-Voltage Laboratory* is used for instruction and research with 60-cycle voltages ranging up to 100,000 volts and impulse voltages up to 500,000 volts. The nature of electrical breakdown of insulating materials is currently being investigated.

In the *Ferromagnetics Laboratory* investigations are being conducted into such properties of ferromagnetic materials as magneto-thermal, magneto-optical, magneto-resistive and magneto-strictive effects.

In the *Superconducting-Circuits Laboratory* research is being conducted with the aim of exploiting in engineering applications some of the unique physical phenomena which are observed to obtain at temperatures in the vicinity of absolute zero.

Through *Amateur Radio Station W4AHY,* which is licensed to operate on the popular amateur bands using both voice and code transmission, interested students who hold licenses gain practical experience in short-wave radio.

Program of Studies for the Degree of Bachelor of Science in Electrical Engineering

Freshman Year

FIRST SEMESTER			S.H.	SECOND SEMESTER			S.H.
Engrg	1	Engineering Drawing	2	Engrg	2	Descriptive Geometry	2
Engl	1	English Composition	3	Engl	2	English Composition	3
Hist	E1	U. S. in World Today	3	Hist	E2	U. S. in World Today	3
Math	21	Introductory Calculus	3	†Math	22	Introductory Calculus	3
Phys	41	General Physics	4	Phys	42	General Physics	4
*Approved Elective			3	*Approved Elective			3
PE		Physical Education	1	PE		Physical Education	1
			19				19

Sophomore Year

FIRST SEMESTER			S.H.	SECOND SEMESTER			S.H.
Chem	1	Gen. Inorg. Chemistry	4	Chem	2	Gen. Inorg. Chemistry	4
Econ	51	Principles of Economics	3	Engl	E93	Written and Oral Communication	3
EE	53	E. E. Fundamentals	1	†EE	56	Electric Networks	4
EE	55	Electric Circuits	4	Engrg	60	Statics-Strength	4
*Approved Elective			3	Math	64	Intermediate Calculus	3
Math	63	Intermediate Calculus	3	PE		Physical Education	1
PE		Physical Education	1				
			19				19

Junior Year

FIRST SEMESTER			S.H.	SECOND SEMESTER			S.H.
EE	109	Electromagnetic Systems	4	†EE	110	Electromagnetic Systems	4
EE	111	Electrical Prin. Lab	2	EE	112	Electrical Prin. Lab	1
Engrg	115	Dynamics	3	Engrg	128	Fluid Mechanics	3
Math	111	Applied Math Analysis I	3	Math	112	Applied Math. Analyis II.	3
Phys	161	Modern Physics	3	ME	103	Thermodynamics	3
*Humanities-Social Studies Elective			3	ME	116	M. E. Laboratory	1
				*Humanities-Social Studies Elective			3
			18				18

† Courses which must be passed before engineering academic standing can be advanced. (See page 50).

Senior Year

FIRST SEMESTER			S.H.
EE	165	Senior Seminar	1
EE	181	Electronic Networks	3
EE	183	Electronics Laboratory	1
EE	191	Electric Machinery	3
EE	193	Elec. Mach. Laboratory	1
*EE Elective			3
*Approved Elective			3
*Humanities-Social Studies Elective			3
			18

SECOND SEMESTER			S.H.
EE	166	Senior Seminar	1
EE	182	Electronic Networks	3
EE	184	Electronics Laboratory	1
EE	192	Electric Machinery	3
EE	194	Elec. Mach. Laboratory	1
*Approved Elective			3
*Approved Elective			3
*Humanities-Social Studies Elective			3
			18

* Part of a planned program of electives to be chosen in consultation with the advisor.

Program of Studies in Electrical Engineering for the Degree of Master of Science

Through the Graduate School of Arts and Sciences, the Department of Electrical Engineering offers work leading to the degree of Master of Science. As a prerequisite to graduate study the student normally must have been awarded a Bachelor's degree in an accredited engineering curriculum. Minimum prerequisites to the graduate courses in electrical engineering are a knowledge of differential equations, electric and magnetic field theory, and the theory of networks.

The minimum requirement for the M.S. degree is satisfactory completion of 30 units of graduate work, as follows: 12 units in engineering, 12 units of minor work outside of engineering (normally in mathematics and physics), and 6 units of credit for a research-based thesis in one of the following fields: dielectric and magnetic materials; electronics; superconducting circuits; information processing; energy conversion and control; and high voltage phenomena. There is no foreign language requirement.

Courses of Instruction

EE 53. ELECTRICAL ENGINEERING FUNDAMENTALS.—Survey of electrical engineering profession: role of engineering and professional engineering societies in national life; engineering economy; engineering law; technical engineering problems; basic philosophy of engineering education; introduction to staff, curriculum, and facilities of Department of Electrical Engineering. One two-hour session. 1 s.h.
Associate Professor Kraybill and Mr. Olive

EE 55. ELECTRIC CIRCUITS.—Principles of alternating- and direct-current electric circuits: physical nature of circuit elements and sources of excitation; volt-ampere relations for elements and sources singly and in simple combination; instantaneous and effective values; algebra of phasors and complex quantities; locus diagrams; Fourier wave analysis; single-phase and polyphase circuits. Prerequisite:

Physics 42. Concurrent: Mathematics 63. Three class sessions and one two-hour computation. 4 s.h.

ASSOCIATE PROFESSOR WILSON AND MESSRS. DORRIS AND PILKINGTON

EE 56. ELECTRIC NETWORKS.—Network topology; loop and nodal analysis; duality; transients; Laplace transformation; time and frequency domains; network functions; pole-zero plots; feedback systems. Prerequisite: EE 55. Concurrent: Mathematics 64. Three class sessions and one two-hour computation. 4 s.h.

PROFESSOR VAIL AND MESSERS. DORRIS AND PILKINGTON

EE 109-110. ELECTROMAGNETIC SYSTEMS.—Mathematical and physical consideration of energy relations and forces associated with both discrete particles and materials in electromagnetic fields: vector notation; Maxwell's equations; static and quasi-static fields; energy, power flow, and impedance; particle ballistics; electron emission; control of conduction in vacuums, gases, liquids, and solids; resistance, capacitance, and inductance of systems of conductors; forces between relatively moving bodies; dielectric and magnetic materials. Prerequisite: EE 56. Concurrent: Mathematics 111. Three class sessions and one two-hour computation. 8 s.h.

ASSOCIATE PROFESSOR ARTLEY, AND MESSERS. JONES AND STEWART

EE 111-112. ELECTRICAL PRINCIPLES LABORATORY.—Instruction in electrical laboratory techniques; experimental study of basic principles of electromagnetics, electronics, and electric and magnetic circuits. Prerequisite: EE 56. Concurrent: EE 109-110. Two three-hour laboratory periods throughout first semester; one throughout second semester. 3 s.h.

MESSRS. PARKER, PILKINGTON, RATHMELL, AND WOOTEN

EE 123. FUNDAMENTALS OF ELECTRICAL ENGINEERING.—Introductory treatment of electrical engineering fundamentals for students majoring in other branches of engineering: principles of electric circuits, fields, and electronics. Prerequisites: Mathematics 63 and Physics 42. Concurrent: EE 125. Three class sessions. 3 s.h.

ASSOCIATE PROFESSOR KRAYBILL AND MR. MCKEEL

EE 124. INDUSTRIAL ELECTRICAL ENGINEERING.—Introductory treatment of industrial applications of electrical engineering fundamentals for students majoring in other branches of engineering: alternating- and direct-current machinery; electronic and electromagnetic control systems; illumination principles. Prerequisite: EE 123. Concurrent: EE 126. Three class sessions. 3 s.h.

ASSOCIATE PROFESSOR KRAYBILL AND MR. MCKEEL

EE 125. ELECTRICAL FUNDAMENTALS LABORATORY.—Laboratory course paralleling course EE 123, with which it should be taken concurrently. One three-hour laboratory. 1 s.h. STAFF

EE 126. INDUSTRIAL ELECTRICAL LABORATORY.—Laboratory course paralleling course EE 124, with which it should be taken concurrently. One three-hour laboratory. 1 s.h. STAFF

EE 127. *ELECTRONICS FOR ENGINEERS.—Introductory treatment of principles and applications of engineering electronics for students majoring in other branches of engineering: amplifiers; feedback; basic communications and control circuits; electronic computers. Prerequisite: EE 123 and permission of instructor. Three class sessions. 3 s.h. MR. YOUNG

EE 159. *TRANSMISSION.—Development of theory underlying transmission of electric energy over conductors at both power and communication frequencies. Two class sessions and one two-hour computation. Prerequisite: EE 110; Mathematics 111. Elective for electrical majors. 3 s.h. PROFESSOR SEELEY

EE 161. *HIGH-VOLTAGE PHENOMENA.—Introductory study of high-voltage phenomena and their engineering application; behavior of gaps and insulators upon application of power-frequency and impulse voltages; corona; properties of insulating materials; high-voltage measurements; elements of high-voltage design. Two class sessions and one three-hour laboratory. Prerequisite: EE 110 and permission of instructor. Elective for electrical majors. 3 s.h. PROFESSOR VAIL

* Offered only upon sufficient demand; enrollment limited.

EE 165-166. ELECTRICAL ENGINEERING SEMINAR.—A course in which seniors are required to present oral reports and dissertations on material appearing in current engineering literature. Juniors may participate, but without credit. One class session. 2 s.h. Staff

EE-171. *FUNDAMENTALS OF ILLUMINATION.—Factors that influence seeing; lighting language, sources, and measuring techniques; basic factors involved in recommended lighting practice. Two class sessions and one two-hour computation. Prerequisite: EE 56 or EE 123, and permission of instructor. Elective. 3 s.h. Associate Professor Kraybill

EE 173-174. *PROJECTS IN ELECTRICAL ENGINEERING.—A course which may be undertaken only by seniors who show special aptitude, or who may have had previous experience directly related to the proposed project. The consent of the Chairman of the Department must be obtained before registering. Elective for electrical majors. 3-6 s.h. Staff

EE 177. *ENERGY TRANSMISSION AND RADIATION.—A more advanced treatment of electromagnetic theory than is afforded by EE 109-110, with particular application to wave guides and antennas. Prerequisite: EE 110 and permission of instructor. Three class sessions. 3 s.h. Associate Professor Artley

EE 179. *ADVANCED ELECTRICAL MEASUREMENTS.—Theory and practice of measurements of electrical quantities at extremes of voltage, current, power, and frequency. Two class sessions and one three-hour laboratory. Prerequisite: EE 110 and permission of instructor. 3 s.h. Associate Professor Owen

EE 181-182. ELECTRONIC NETWORKS.—Advanced topics in engineering electronics: piece-wise linear approximation for nonlinear operation and incremental models for linear operation of basic electronic circuits; narrow- and wide-band amplifiers; feedback amplifiers; oscillators; modulation and demodulation; microwave devices; communication systems. Prerequisite: EE 110. Concurrent: EE 183-184. Three class sessions. 6 s.h.

Associate Professor Owen and Assistant Professor George

EE 183-184. ELECTRONICS LABORATORY.—Laboratory course paralleling and integrated with course EE 181-182, with which it should be taken concurrently. One three-hour laboratory. 2 s.h. Messrs. Dorris, Jones, Rathmell, and Young

EE 189. *ELECTROMAGNETIC DEVICES.—General concepts and techniques useful in solving problems arising in the design of electromagnetic devices, particularly those employing ferromagnetic materials; relays; saturable reactors; rotating amplifiers; motors and generators. Prerequisite: permission of instructor. 3 s.h.

Associate Professor Artley

EE 191-192. ELECTRIC MACHINERY.—Application of circuit and field principles to underlying theory of static and rotating electric machinery: mathematical techniques for analyzing transformers and electromechanical energy converters as individual devices and when interconnected into systems. Prerequisite: EE 110. Concurrent: EE 193-194. Three class sessions. 6 s.h.

Professor Meier and Associate Professor Wilson

EE 193-194. ELECTRIC MACHINERY LABORATORY.—Laboratory course paralleling and integrated with course EE 191-192, with which it should be taken concurrently. One three-hour laboratory. 2 s.h.

Professor Meier, Associate Professor Wilson, and Mr. Parker

EE 199. *FEEDBACK CONTROL SYSTEMS.—Theory, analysis, design, and operation of servomechanisms, regulators, program controllers, and other feedback controls; electrical, mechanical, hydraulic, aerodynamic, pneumatic, and thermal systems; steady-state and transient solutions; stability criteria and diagrams; linear and nonlinear systems. Two class sessions and one three-hour laboratory. Prerequisite: EE 110 and permission of instructor. Concurrent: 191 or 192. Elective for electrical majors. 3 s.h. Mr. Young

* Offered only upon sufficient demand: enrollment limited.

GRADUATE COURSES

PROFESSOR VAIL, CHAIRMAN AND DIRECTOR OF GRADUATE STUDIES; PROFESSOR MEIER; ASSOCIATE PROFESSORS ARTLEY, OWEN, AND WILSON

EE 201. *ENERGY SYSTEMS.—General concepts of energy storage, transfer, transformation, and control that are applicable to a wide variety of technical systems, with emphasis on their common mathematical structure: electrical, magnetic, mechanical, hydraulic, aerodynamic, and thermal systems; applications to specific engineering devices and machines. Prerequisite: permission of instructor. 3 units.
ASSOCIATE PROFESSOR ARTLEY

EE 202. *INFORMATION SYSTEMS.—General concepts of information storage, transfer, and processing; optimum total response of information handling systems, including considerations of stability and dynamic response in the time and frequency domains; applications to communications networks and devices, including an introduction to computers. Prerequisite: permission of instructor. 3 units.
ASSOCIATE PROFESSOR OWEN

EE 211. *SOLID STATE ENGINEERING.—Introductory concepts and engineering applications of solid state physics: crystalline structure and thermal properties of solids; insulators, semiconductors, and conductors; magnetic materials. Prerequisite: permission of instructor. 3 units. PROFESSOR VAIL

EE 222. *NONLINEAR ELECTROMAGNETICS.—Analytic approximations for nonlinear characteristics; use of idealized components in the analysis of piecewise-linear systems; approaches applicable when a material such as high-permeability steel possesses characteristics which are different under static and dynamic conditions; applications to devices such as transductors, self-saturating magnetic amplifiers, modulators, ferroresonent circuits, relaxation oscillators and parametric amplifiers. Prerequisite: permission of instructor. 3 units.
ASSOCIATE PROFESSOR WILSON

EE 231. *NUCLEAR ENGINEERING.—Review of nuclear physics; fission and the chain reaction; nuclear reactor principles; materials, instrumentation, and control of nuclear reactors; selected applications and techniques of nuclear engineering. Prerequisite: permission of instructor. 3 units. PROFESSOR MEIER

EE 259. *ADVANCED ELECTRICAL ENERGY CONVERSION.—Advanced theory of rotating electric machines; direct and quadrature axis components; equivalent circuits; symmetrical components; transients in machine systems. Prerequisite: an advanced course in electric machinery and permission of instructor. 3 units.
PROFESSOR MEIER AND ASSOCIATE PROFESSOR WILSON

EE 265. *ADVANCED TOPICS IN COMMUNICATIONS.—Special problems dealing in the design and application of devices and systems in communications engineering. Prerequisite: an advanced course in electronic networks. 3 units.
ASSOCIATE PROFESSOR OWEN

EE 297, 298. THESIS RESEARCH.—A student with the proper background may carry on research under direction of a member of the staff in one of the following fields: dielectric materials; magnetic materials; energy conversion; instrumentation; high voltage phenomena. Thesis credit only. 6 units.
ALL MEMBERS OF THE GRADUATE STAFF

* Offered only upon sufficient demand; enrollment limited.

Department of Mechanical Engineering

John Nelson Macduff, Chairman
Professor

Van Leslie Kenyon, Jr.
Professor

Thomas Allan Boyle
Associate Professor

Ernest Elsemer
Associate Professor

Harold Patty Stephenson
Associate Professor

Ralph Elton Lewis
Assistant Professor

Gale Herbert Buzzard
Instructor

Donald Amos Callfson
Instructor

Thomas Hawkes Nash, Jr.
Instructor

Ozer Arnas
Instructor, Part-time

Tuncer Cebeci
Instructor, Part-time

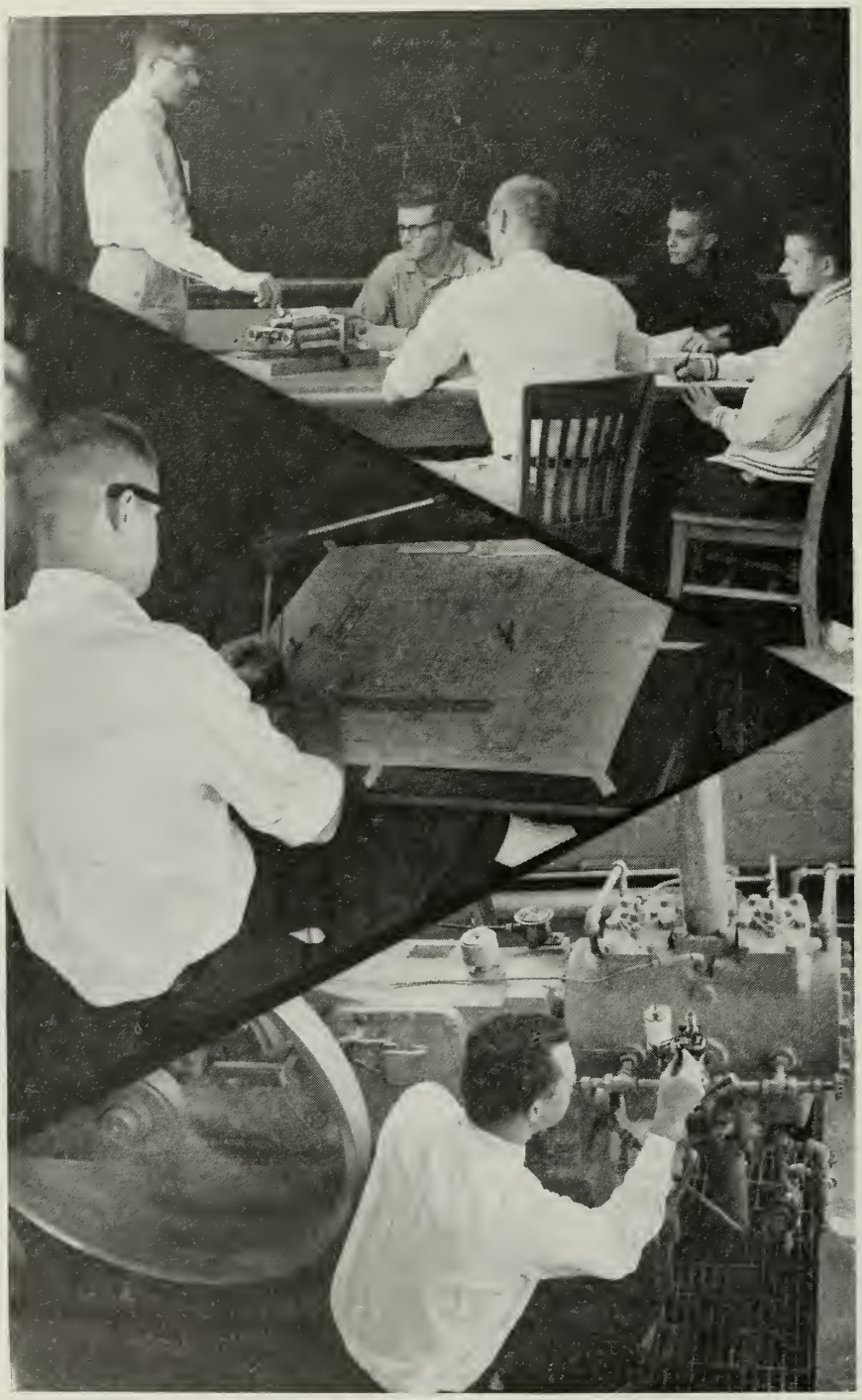
Arsev Eraslan
Instructor, Part-time

John Spellman Glenn
Instructor, Part-time

THE MECHANICAL ENGINEER is concerned with the conversion of natural sources of energy into useful work, the utilization of energy in machines which process goods, and the organization of men and machines for the manufacture of devices. To fulfill these functions, the mechanical engineer must possess a thorough knowledge of the basic sciences and be adept in using this knowledge to find optimum solutions to the problems with which he is confronted. In general, he would pursue a career in one of the following comprehensive fields: (1) research, development and design; (2) production, manufacturing and operation; and (3) management.

The mechanical engineering curriculum at Duke University provides a balance between basic sciences, mathematics, engineering sciences, social sciences, humanities and professional engineering courses. Flexibility is provided in the form of electives by which the student may emphasize particular goals of his own choosing. The elective programs may be chosen to provide a strong minor in mathematics, the physical sciences, economics, or the humanities. Outstanding students may elect projects in their senior year which test and develop their ability to do research work.

The curricular and extracurricular activities provide an excellent opportunity to develop scientific knowledge, mental discipline, judgment and ingenuity, leadership, and ethical responsibility.



The laboratories and their associated apparatus provide facilities both for undergraduate instruction and for graduate level research. For the undergraduate, laboratory work strengthens the student's understanding of the fundamentals taught in the class room, and provides experience in the operation of mechanical equipment. At the graduate level, research is the key to the student's whole program. Equipment is provided for studies in the major fields of mechanical engineering.

Thermodynamics is fundamental to power generation, whether through the medium of steam or in internal combustion engines. Power equipment also provides an excellent opportunity to study the applications of heat transfer mechanisms and the chemistry of combustion.

Steam power equipment includes two turbo-generators equipped for laboratory experimentation in power generation and control, an additional turbine and two steam engines.

Internal combustion engines, including two Diesel engines and two automobile engines, are available for undergraduate laboratory experiments. A CFR variable compression-ratio engine, in a separate laboratory with complete control and testing equipment, is available for further investigations by seniors and graduate students. Indicator diagrams can be obtained either through electronic strain-gage or with purely mechanical devices.

Basic thermodynamic experiments are also performed on such apparatus as a large single-stage air compressor, a small boiler fitted with heat exchangers, circulating pumps, and experimental refrigeration equipment.

Heat flow problems are studied by using thermocouples or resistance thermometers to determine temperature distribution as a function of time. For steady-state conduction problems, the experimental results are compared with the results obtained from analog water tanks and with analytical calculations. For transient heat conduction, a thermal board using the electrical analogy is provided for determination of the ideal results.

Fluid flow problems are investigated with special equipment for studying flow in pipes, an orifice jet tank, and a nozzle thrust measuring stand. An axial flow fan with plenum chambers and nozzle bank and a centrifugal fan fitted with orifices and a pitot tube are also used. A steam vacuum ejector furnishes the necessary pressure difference to permit the investigation of air flow at Mach numbers of one or more.

A Metallography and Stress Analysis Laboratory contains a metallurgical microscope with photographic equipment, a darkroom, polishing equipment, a specimen mounting press, and a small automatically controlled furnace. This equipment permits a study of the grain

and crystal structure of metals and of the effects of heat treatments. A large polariscope affords measurement and visual observation of stresses in plastic models. Metallurgical research is currently being pursued in the department through a study of the growth and mechanical properties of metallic whiskers.

Mechanical system analysis is initiated by experimental studies of single degree of freedom systems. In addition to simple systems for free vibration studies, excitation for forced vibration is provided by a mechanical vibration table and an electro-dynamic shaker. Simple pickups, strain gage amplifiers, and associated recording equipment are available for measurement.

Closed loop systems are investigated with a flow control system and an air turbine position control test stand.

An analog computer provides the means for more sophisticated study of both thermal and mechanical systems. Accessory equipment, in addition to the normal recording apparatus, consists of function generators, multipliers, and varistors for approximate simulation of simple nonlinear systems. The measurement and excitation equipment, as well as the analog computer, is used for graduate and staff research, as well as for undergraduate instruction.

Machine shop facilities and an experienced mechanic are available for student and faculty projects and for special instruction. Experimental apparatus for projects, graduate research, and staff research is normally built in the department shop.

Program of Studies for the Degree of Bachelor of Science in Mechanical Engineering

Freshman Year

FIRST SEMESTER			S.H.
Engrg	1	Engineering Drawing	2
Engl	1	English Composition	3
Hist	E1	U. S. in World Today	3
Math	21	Introductory Calculus	3
Phys	41	General Physics	4
Approved Elective			3
PE		Physical Education	1
			19

SECOND SEMESTER			S.H.
Engrg	2	Descriptive Geometry	2
Engl	2	English Composition	3
Hist	E2	U. S. in World Today	3
†Math	22	Introductory Calculus	3
Phys	42	General Physics	4
Approved Elective			3
PE		Physical Education	1
			19

Sophomore Year

FIRST SEMESTER			S.H.
Chem	1	General Inorg. Chem	4
Engrg	57	Statics	3
Math	63	Intermediate Calculus	3
ME	59	Materials and Processes	3
*Humanistic-Social Elective			3
PE		Physical Education	1
			17

SECOND SEMESTER			S.H.
Chem	2	General Inorg. Chem	4
Engrg	107	Mechanics of Materials	3
Engrg	109	Materials Laboratory	1
†Math	64	Intermediate Calculus	3
†ME	52	Kinematics, Kinetics	4
*Humanistic-Social Elective			3
PE		Physical Education	1
			19

Junior Year

FIRST SEMESTER			S.H.
Engl	E93	Written and Oral Communication	3
Math	111	Applied Math. Analysis I	3
ME	101	Thermodynamics	3
ME	105	Dynamics of Liquids	3
ME	113	M. E. Laboratory	1
ME	141	Machine Design	3
*Humanistic-Social Elective			3
			19

SECOND SEMESTER			S.H.
Econ	51	Prin. of Economics	3
Math	112	Applied Mathematical Analysis II	3
†ME	102	Thermodynamics	3
†ME	106	Heat Transfer	3
ME	114	M. E. Laboratory	1
†ME	142	Machine Design	3
*Humanistic-Social Elective			3
			19

Senior Year

FIRST SEMESTER			S.H.
EE	123	Fundamentals of E. E.	3
EE	125	E. E. Fundamentals Lab.	1
ME	159	M. E. Laboratory	1
ME	171	Response of Phys. Systems	3
ME	173	Seminar	1
ME		Elective	3
*Approved Electives			6
			18

SECOND SEMESTER			S.H.
EE	124	Industrial E. E.	3
EE	126	Industrial E. E. Lab.	1
ME	156	Combustion Engines	3
ME	160	M. E. Laboratory	1
ME	162	Power Plants	3
ME	174	Seminar	1
*Approved Electives			6
			18

* The Approved Electives form a planned program of electives to be chosen in consultation with the advisor.

† Courses which must be passed before engineering academic standing can be advanced. (See page 50).

Program of Studies in Mechanical Engineering for the Degree of Master of Science

Through the Graduate School of Arts and Sciences, the Department of Mechanical Engineering offers work leading to the degree of Master of Science. As a prerequisite to graduate study the student normally must have been awarded a Bachelor's degree in an accredited engineering curriculum. Minimum prerequisites to the graduate courses in mechanical engineering are a knowledge of differential equations, undergraduate thermodynamic theory, kinematics, mechanics, and machine design.

The minimum requirement for the M.S. degree is satisfactory completion of 30 units of graduate work, as follows: 12 units in engineering, 12 units of minor work outside engineering (normally in mathematics and physics), and 6 units of credit for a research-based thesis in one of the following fields: systems engineering; thermodynamics; heat transfer; and fluid flow. There is no foreign language requirement.

Courses of Instruction

ME 52. KINEMATICS, KINETICS.—Analytical and numerical studies of displacement, velocity, and acceleration in mechanical elements and systems. Synthesis and analysis of mechanisms for automatic machines, application of work, energy, impulse and momentum. Prerequisite: Engrg 2, Phys 41. Concurrent: Math 63. 4 s.h. PROFESSOR MACDUFF, ASSOCIATE PROFESSOR STEPHENSON AND MR. NASH

ME 59. MATERIALS AND PROCESSES.—Elementary metallurgy and introduction to modern theories of the solid state; selection and properties of engineering materials and effect of forming processes upon properties. Prerequisite: sophomore standing. 3 s.h. ASSOCIATE PROFESSOR STEPHENSON AND MR. CALLESON

ME 101-102. ENGINEERING THERMODYNAMICS.—A basic study of the laws of thermodynamics and their use in engineering analysis and design. Properties of pure substances; vapor cycles; fluid flow; thermodynamic machinery; introduction to combustion processes. Prerequisite: Chem 1, Phys 41. Concurrent: Math 64. 6 s.h. PROFESSOR KENYON, ASSOCIATE PROFESSORS BOYLE AND ELSEVIER

ME 103. THERMODYNAMICS.—A terminal course in thermodynamics and its engineering applications for civil and electrical engineering students. The basic laws of thermodynamics; gases; vapors; elements of combustion and heat transfer. Prerequisite: Chem 1, Phys 41. Concurrent: Math 64. 3 s.h.
ASSOCIATE PROFESSOR ELSEVIER, MESSRS. ARNAS AND CALLISON

ME 105. DYNAMICS OF LIQUIDS.—A study of liquids at rest and in motion. Principles of laminar and turbulent flow through pipes, orifices, nozzles, and metering devices; impulse and momentum concepts; vortex action, pumps, turbines and fluid couplings; resistance of immersed and floating bodies. Prerequisite: Phys 41, Math 63. 3 s.h. PROFESSOR KENYON AND MR. BUZZARD

ME 106. HEAT TRANSFER.—A basic course covering the elements of radiation, conduction, and convection. Methods of temperature measurement, steady and transient heat flow, analytical and numerical methods. Concurrent: ME 102, 105; Math 111. 3 s.h. ASSOCIATE PROFESSOR STEPHENSON AND MR. BUZZARD

ME 113-114. JUNIOR MECHANICAL ENGINEERING LABORATORY.—Measurement of mechanical and thermodynamic properties of systems. Student planning and reporting of laboratory experiments in temperature, pressure, velocity, acceleration, flow, energy and power measurements. Concurrent: ME 101-102, ME 105-106. 2 s.h. Staff

ME 116. MECHANICAL ENGINEERING LABORATORY.—Primarily for civil and electrical engineering students. Selected laboratory experiments in measuring mechanical and thermodynamic properties of systems. Student planning of experiments in temperature, pressure, velocity, acceleration, flow, energy and power measurements. Concurrent: ME 103. 1 s.h. Staff

ME 128. *DYNAMICS OF GASES.—The flow of compressible fluids at high velocities. One-dimensional compressible flow: area change; normal shock; friction and heat transfer; Mach number. Concurrent: ME 102, ME 106. 3 s.h. Mr. Buzzard

ME 141. MACHINE DESIGN.—Methods of design of typical machine elements; strength and deflection requirements; simple shafts, springs, power transmitting devices, materials, and cost analysis. Prerequisite: Engrg 107, ME 59. Concurrent: ME 52. 3 s.h. Assistant Professor Lewis, Messrs. Calleson and Nash

ME 142. MACHINE DESIGN.—A continuation of ME 141. Analysis of gears and gear trains, lubrication, brakes and clutches; introduction to advanced topics. Prerequisite: ME 141. 3 s.h. Assistant Professor Lewis, Messrs. Calleson and Nash

ME 153. *HEATING, AIR CONDITIONING AND REFRIGERATION.—Principles of thermodynamics, heat transfer and fluid flow applied to comfort and industrial air conditioning. Cycles and equipment for heating, cooling, and humidity control. Air transmission and distribution. Modern vapor compression, absorption and low temperature refrigeration cycles and systems. Prerequisite: ME 102 and 106. 3 s.h. Associate Professors Elsevier and Stephenson

ME 156. COMBUSTION ENGINES.—A study of cycles, fuels, and fuel mixtures in piston, ram jet, and rocket engines. Comparison of real and theoretical cycles; carburetion and fuel injection systems; modern developments. Prerequisite: ME 102. 3 s.h. Associate Professor Elsevier

ME 157. *PUMPS, COMPRESSORS AND TURBINES.—An introduction to the theory and design of centrifugal pumps and compressors, axial-flow compressors, impulse and reaction turbines, and gas turbine plants, combustion systems and regenerators. Concurrent: ME 102 and 106. 3 s.h. Associate Professor Boyle

ME 159-160. SENIOR MECHANICAL ENGINEERING LABORATORY.—Laboratory determination of heat flow and operating characteristics of engines, fans, pumps, and other power and refrigeration plant components; vibrational systems, control systems, analog methods. Student planning and reporting of original experiments. 2 s.h. Staff

ME 162. POWER PLANTS.—Basic concepts of thermodynamics, heat transfer and fluid flow are combined with industrial data for the consideration of real power plant problems. Selection of steam generators, prime movers, fans, pumps, heaters, and piping systems with regard to engineering and economic points of view. Prerequisite: ME 102. 3 s.h. Professor Kenyon and Associate Professor Boyle

ME 163. *VIBRATION CONTROL.—An introduction to the dynamics of mechanical systems; equilibrium, stability, lumped and distributed systems, cradle and field balancing. System analysis by classical differential equations, mechanical impedance, operational calculus and analog simulation. Prerequisite: Math 64, ME 141. 3 s.h. Professor Macduff

ME 164. *ENGINEERING ANALYSIS.—A study of a series of engineering problems with particular reference to mathematical and graphical methods of solution and engineering interpretation of results. Concurrent: Math 64. 3 s.h. Associate Professor Boyle

* Offered only upon sufficient demand; enrollment limited.

ME 166. *AIR CONDITIONING DESIGN.—Typical air conditioning systems considered in relation to specific problems. Equipment analysis and performance, economic considerations, system control and response, noise generation and attenuation. Prerequisite: ME 153. 3 s.h. ASSOCIATE PROFESSORS BOYLE AND ELSEVIER

ME 167. INDUSTRIAL ENGINEERING.—A study of the organization and functioning of industries; function of engineering in industry; job analysis and self evaluation; professional and executive responsibility of the mechanical engineer. Prerequisite: Senior standing. 3 s.h. PROFESSOR KENYON AND ASSISTANT PROFESSOR LEWIS

ME 171. RESPONSE OF PHYSICAL SYSTEMS.—An introduction to the basic fundamentals of instrumentation and of the control of processes and systems with emphasis on correlation of analysis and experimental results. Prerequisite: Math 111. 3 s.h. PROFESSOR MACDUFF, ASSOCIATE PROFESSOR BOYLE AND MR. BUZZARD

ME 173-174. MECHANICAL ENGINEERING SEMINAR.—A course designed to keep the students abreast of progress in the engineering field and to develop their ability to express ideas effectively in speech and writing. Open to seniors only. 2 s.h. STAFF

ME 197-198. PROJECTS IN MECHANICAL ENGINEERING.—This course may be assigned by the Chairman of the Department to outstanding seniors who express a desire for such work and who have shown aptitude for research in one distinct field of mechanical engineering. Prerequisite: 3.0 average and senior standing. 1-6 s.h. STAFF

GRADUATE COURSES

PROFESSOR MACDUFF, CHAIRMAN AND DIRECTOR OF GRADUATE STUDIES; PROFESSOR KENYON; ASSOCIATE PROFESSORS ELSEVIER, BOYLE, AND STEPHENSON

ME 201. *THEORETICAL AND APPLIED MECHANICS.—Introduction to the theory of elasticity, vibration analysis, and hydrodynamics. This course is the same as CE 201. 3 units. PROFESSORS MACDUFF AND ROWE

ME 202. *THEORETICAL THERMODYNAMICS.—Classical and modern concepts of the conversion of heat and work; the combined First and Second Law; thermo-electricity; super-critical pressure systems; reheat and regenerative processes, binary-vapor systems; introduction to unsteady systems. 3 units. PROFESSOR KENYON, ASSOCIATE PROFESSORS ELSEVIER AND STEPHENSON

ME 221. *ANALYSIS OF INCOMPRESSIBLE AND COMPRESSIBLE FLUID FLOW.—Flow of incompressible and compressible fluids; boundary layer phenomena for viscous fluids; Mach number concept for sonic and subsonic flow; experimental methods. 3 units. PROFESSOR KENYON AND ASSOCIATE PROFESSOR BOYLE

ME 222. *ANALYSIS OF HEAT TRANSFER.—Heat transfer by conduction, convection, and radiation; lumped and distributed heat capacity, resistance, losses; steady and transient flow. 3 units. PROFESSOR KENYON AND ASSOCIATE PROFESSOR STEPHENSON

ME 231-232. *SYSTEMS ENGINEERING.—Methods of obtaining parameters for strength, response, and stability studies of mechanical systems. Impedance and operational means of analysis; mechanical and electronic analogs; nonlinear theories. 6 units. PROFESSOR MACDUFF

ME 280. *NUCLEAR REACTOR POWER CYCLES.—Introduction to basic reactor principles and reactor types. Consideration of thermodynamic cycles for nuclear reactors for stationary and mobile plants. Analysis of fluid flow and heat transfer problems unique to reactors with development of methods of reactor safety techniques. Metallurgical problems peculiar to reactor design. 3 units. PROFESSOR KENYON

ME 297, 298. THESIS RESEARCH.—A student with proper background may carry on research under the direction of the staff in one of the following fields: systems engineering; thermodynamics; heat transfer; and fluid flow. Thesis credit only. 6 units. ALL MEMBERS OF THE GRADUATE STAFF

* Offered only upon sufficient demand; enrollment limited.

Subjects Common to All Curricula

Engineering

ENGRG. 1. ENGINEERING GRAPHICS.—The study of mechanical drawing with emphasis on third angle projection, pictorial drawing, dimensioning, working drawings, pencil and ink techniques. 2 s.h.

Assistant Professors Haines and Lewis and Staff

ENGRG. 2. DESCRIPTIVE GEOMETRY.—A study of drawing board geometry with emphasis on line and plane problems, developments, and intersections. Further emphasis on drawing techniques. Prerequisite: Engrg. 1. 2 s.h.

Assistant Professors Haines and Lewis and Staff

ENGRG. 57. STATICS.—A study of force systems, equilibrium by algebraic and graphic methods, friction, centroids, moments of inertia. Prerequisite: Engrg. 1; concurrent: Math 63. 3 s.h. Assistant Professor Harrawood and Tharp

ENGRG. 60. STATICS AND STRENGTH OF MATERIALS.—Force systems, friction, centroids, and moments of inertia. Stresses and deformations in elastic bodies. Concurrent: Math 64. For electrical engineers and non-engineering students. Three class sessions and one three-hour computation period. 4 s.h. Staff

ENGRG. 107. MECHANICS OF MATERIALS.—Stresses and strains in elastic bodies; shear and moment diagrams; stresses in beams; beam deflections by double integration and area-moments; statically indeterminate beams, torsion, principal stresses. Prerequisite: Engrg 57; concurrent: Math 64. 3 s.h.

Professor Rowe and Assistant Professor Arges

ENGRG. 109. MECHANICS OF MATERIALS LABORATORY.—Study and use of testing machines and strain gages; tests to determine significant mechanical properties of the common engineering materials; experimental verification of the elementary theory of structural members. Must be preceded or accompanied by Engrg. 107. 1 s.h. Assistant Professor Arges

ENGRG. 115. DYNAMICS.—General principles of dynamics as applied to particles and rigid bodies. Translation, rotation, general plane motion, work and energy, impulse and momentum, gyroscopic motion. Prerequisite: Engrg 57 or Engrg 60; concurrent: Math 64. Associate Professors Gardner and Palmer

ENGRG. 128. FLUID MECHANICS.—Physical properties of fluids, fluid statics, continuity and energy principles, pressure-momentum principle, elementary principles of turbines and pumps, flow of a real fluid, dimensional analysis and dynamic similarity, fluid flow in closed conduits and in open channels, fluid measurements. Prerequisite: Engrg 115 or ME 52, Math 64. 3 s.h.

Professor Williams and Assistant Professor Harrawood

ENGRG. 151. *AIRCRAFT STRUCTURES.—Fundamental theory of stress analysis of airplane components including an introduction to design principles and methods. Space structures, inertia forces, load factors, properties of aircraft materials, buckling of thin sheets and curved panels, semimonocoque structures, plasticity shear flow theory, semitension field beams. Seniors only. Prerequisite: Engrg. 107. 3 s.h. Professor Rowe

ENGRG. 153. *ARCHITECTURAL ENGINEERING.—The application of engineering principles to architecture; the influence of engineering function and trends on design; the interrelationship of engineering with architecture; the analysis of structural details and of processes of construction; field trips and inspection of construction projects. Prerequisite: permission of instructor. 3 s.h.

Assistant Professor Haines

ENGRG. 169. *LEGAL ASPECTS OF ENGINEERING.—A course designed to introduce engineering students to those aspects of the law encountered in the practice of engineering. Subjects included are: contracts and specifications, real and personal property, torts, insurance, agency, equity, evidence, labor management, sales, expert testimony, engineering registration and ethics. Open to seniors only. 3 s.h. Mr. Olive

* Offered only upon sufficient demand; enrollment limited.

ENGRG. 170. *PATENT LAW FOR ENGINEERS.—A course designed to familiarize engineering students with the legal principles and procedures for protecting patentable inventions, such as drafting and analysis of specifications and claims, study of infringements, assignments, licenses, and record documentation. Open to seniors only. 3 s.h. MR. OLIVE

Non-engineering Subjects

CHEM. 1-2 GENERAL INORGANIC CHEMISTRY.—Lectures, recitations, and laboratory work on the elementary principles of chemistry and on the occurrence, preparation, properties, and uses of the elements and their compounds. One lecture, two recitations, and three laboratory hours, throughout the year. 8 s.h.

ECON. 51, 52. PRINCIPLES OF ECONOMICS.—6 s.h.

ENGL. 1-2. ENGLISH COMPOSITION.—Required of all freshmen. 6 s.h.

ENGL. E 93. WRITTEN AND ORAL COMMUNICATION FOR ENGINEERS. —Emphasis will be placed on the writing of business letters, technical reports, and articles for submission to technical journals. Approximately one third of the course will provide training in the oral presentation of various materials. Open to non-engineering students only upon consent of the instructor. Prerequisite: English 1 and 2. 3 s.h.

HIST. E1-2. THE UNITED STATES IN THE WORLD TODAY.—For students in the College of Engineering. First semester: the rise of national states in Western Europe and other circumstances attending the discovery and settlement of the New World; the foundation of American institutions; the establishment of the Federal Republic; the frontier, the westward movement, and contemporary international development; the Civil War; the growth of industry and its influence on society; the Spanish-American War and the emergence of the United States as a world power. Second semester: the growing interdependence of the Western Nations in the twentieth century; their influence throughout the world; the participation of the United States in the World Wars, and the resulting problems of today. 6 s.h.

MATH. 11. ALGEBRA AND TRIGONOMETRY. Factoring, fractions, linear equations in one or several unknowns, introduction to coordinates and graphing, exponents and radicals, numerical trigonometry. Prerequisite: two units of college preparatory mathematics. 3 s.h.

MATH. 21-22. INTRODUCTORY CALCULUS. Real and complex numbers, rectangular and polar coordinates, graphs, trigonometric and inverse trigonometric functions, logarithmic and exponential functions, conic sections, limits, derivatives, maxima and minima, methods of integration, areas, volumes. Prerequisite: two and one-half units of college preparatory mathematics. 6 s.h.

MATH. 63-64. INTERMEDIATE CALCULUS. Moments, centroids, indeterminate forms, Taylor's formula, approximation of integrals, improper integrals, infinite series, vectors and solid analytic geometry, partial derivatives, multiple integrals, introduction to ordinary differential equations. Prerequisite: Mathematics 22. 6 s.h.

MATH. 111. APPLIED MATHEMATICAL ANALYSIS I. Ordinary and partial linear differential equations with constant coefficients, Fourier series and their applications, vectors. Not open to students who have had Mathematics 131 or 139. Prerequisite: Mathematics 53 or 64. 3 s.h.

MATH. 112. APPLIED MATHEMATICAL ANALYSIS II. Complex variables, residues, conformal mapping, matrices, Laplace and Fourier Transforms and their applications. Prerequisite: Mathematics 53 or 64. 3 s.h.

PHYS. 41-42. GENERAL PHYSICS.—Treats the basic principles of general physics in a more quantitative manner than Physics 1-2. Not open for credit to students who have taken Physics 1-2. Three lecture-recitations and one three-hour laboratory period each week. Concurrent: Math 21-22. 8 s.h.

* Offered only upon sufficient demand; enrollment limited.

PHYS. 161, 162. MODERN PHYSICS.—Review of electromagnetic fields; relativity; quantum phenomena; atomic and molecular spectra; solids; and nuclear physics. Three lectures per week. Prerequisite: Physics 41-42, Math 52 or 63 or equivalent. Physics 161 is prerequisite for 162. 6 s.h.

For additional courses consult the *Undergraduate Bulletin.*

Recommended Minor Subjects for Graduate Students

CHEM. 206. ELEMENTS OF THEORETICAL CHEMISTRY.—A course in the general principles of physical chemistry for students who do not present credit in calculus. Credit is not given for both 206 and 261-262. Three recitations and three laboratory hours. Prerequisites: quantitative analysis, organic chemistry 8 units; physics 8 units, and mathematics 6 units. With the permission of the Director of Graduate Studies, graduate students from other departments may offer other advanced science courses in lieu of some of these prerequisites. 4 units.

CHEM. 261-262. PHYSICAL CHEMISTRY.—Fundamentals of general theoretical chemistry illustrated by selected laboratory experiments. Three recitations and three laboratory hours. Prerequisites: quantitative analysis, organic chemistry 8 units; physics 8 units, differential and integral calculus. 8 units.

MATH. 221. DIGITAL COMPUTER.—History of computers; number representation, information storage, logical arithmetic; components and organization of computing systems; coding and programming; programmed arithmetics, function and functional subroutines, interpretive routines, compilers; error analysis. Two lectures, one laboratory. 3 units.

MATH. 222. INTRODUCTION TO NUMERICAL ANALYSIS.—Error analysis; linear algebra; vectors, matrices, norms and determinants; numerical matrix operations; methods for evaluating inverses, characteristic roots and vectors, of matrices; polynomials and transcendental functions; polynomial approximation and curve fitting; numerical integration and differentiation. Two lectures, one laboratory. Prerequisite: Mathematics 221. 3 units.

MATH. 285. MATHEMATICAL ANALYSIS FOR CHEMISTS AND PHYSICISTS.—Vectors, line and surface integrals, tensors, complex variables, differential and integral equations. Prerequisite: Mathematics 53. 3 units.

MATH. 286. MATHEMATICAL ANALYSIS FOR CHEMISTS AND PHYSICISTS.—Wave equation. Fourier series, heat equations, telegraphic equation, Legendre polynomials, Bessel functions. Schrödinger's equation. Prerequisite: Mathematics 53. 3 units.

MATH. 291-292. THEORY OF FUNCTIONS.—Limits, implicit functions, power series, double series, Cauchy's theorem and its applications, residues, Riemann surfaces, conformal mapping. Prerequisite: calculus. 6 units.

PHYS. 201, 202. MECHANICS.—The fundamental principles of Newtonian mechanics; general dynamics of systems of particles, and rigid bodies; the methods of Lagrange and Hamilton; generalized mechanics. Prerequisite: Physics 125. 6 units.

PHYS. 213, 214. CONTEMPORARY PHYSICS.—A course which covers the fundamental concepts and the experimental basis of modern physics. Three lectures each week. 6 units.

PHYS. 219. ELECTRICITY AND MAGNETISM.—Fundamentals of electricity and magnetism. Physical optics. Electromagnetic waves. 3 units.

For additional courses consult the *Bulletin of The Graduate School of Arts and Sciences.*

Financial Information, Living and Dining Accommodations

FEES paid by the students cover only a part of the cost of their instruction and of the operations of the University. Income from endowment and contributions from the alumni, alumnae, and other public-spirited men and women meet the balance, which constitutes more than half the total cost.

Estimated Expenses for an Academic Year

	Undergraduate Men		*Undergraduate Women*	
Tuition	$ 850.00		$ 850.00	
General Fee	150.00		150.00	
Room Rent	200.00		225.00	
Board	500.00	(Cafeteria estimate)	450.00	(Board rate)
Laundry	75.00		75.00	
Books	50.00		50.00	
	$1,825.00		$1,800.00	

Undergraduate Tuition and Fees

The semester tuition of $425.00 and general fee of $75.00 are due and payable not later than the day of registration for a particular semester. After the day of registration no refund of the tuition or the general fee will be made except for involuntary withdrawal to enter the armed services.

New students, on notification of acceptance, are required to pay a non-refundable first registration fee of $20.00 and to make a deposit of $50.00. The $50.00 deposit will not be refunded to accepted applicants who fail to matriculate. For those who do matriculate $25.00 of the deposit serves as a continuing room deposit for successive semesters, and the remaining $25.00 as a continuing pre-registration deposit, which at the time of pre-registration will reserve a place in classes for the following semester. Arrangements for refund of the $25.00 room deposit are described in information furnished each resident student by the Housing Bureau. The $25.00 pre-registration deposit will be refunded to students (1) whom the University does not permit to return, (2) who graduate, or (3) who request the refund at the time

of pre-registration, thus indicating their intention not to return for the following semester. The pre-registration deposit will not be refunded to students who pre-register and fail to enter the following semester on schedule.

Students who have been re-admitted to the University after an absence of one or more semesters, on notification of re-admission, are required to make the $50.00 room-rent pre-registration deposit.

An Air Force ROTC deposit of $20.00 is required of students enrolling in Air Science to cover possible loss of military equipment issued to them. This deposit is refunded to the student upon return of issued equipment.

In the regular academic year students who register for no more than two courses with a maximum credit of 8 semester hours are classified as special students. They are charged a registration fee of $5.00 for each course and $28.50 for each semester hour of course credit. Registration for 9 or more semester hours, or 3 or more courses, requires payment of full fees.

Auditing of one or more courses without charge is allowed students paying full fees, provided that the consent of the instructor is obtained. Students who are enrolled for not less than 3 nor more than 8 semester hours may audit other courses by payment of $10.00 for each course audited. Auditors submit no daily work, take no examinations, and receive no credit for courses audited.

One transcript is issued free of charge. Additional copies are supplied at $1.00 each.

No records are released and no student is considered by the faculty as a candidate for graduation until he has settled with the Treasurer for all indebtedness.

Bills may be sent to parents or guardians provided the Treasurer has been requested in writing to do so. Failure to pay bills on or before the due dates will debar the student from class attendance until the account is settled in full.

Student Aid

Duke University is interested in students with ability and ambition. It is the aim of the University Scholarship Committee and others affiliated with the Student Aid Program to provide, insofar as possible, the financial assistance required by worthy students. This assistance takes various forms. The actual cost to the University for each student is more than twice the amount received from the student. The deficit is paid out of contributions and income from endowment. Scholarships and prizes enable students with inadequate resources to reduce the amount payable to the University. Loans are made available, and through the Student Employment Offices part-time jobs are arranged.

Through the Student Aid Program an earnest effort is made to eliminate the economic status of the student as a criterion for admission.

Undergraduate Scholarships, Loans, and Student Employment

ENGINEERING SCHOLARSHIP FUND

Established by gifts of various persons; to be used for scholarship aid to engineering students.

THOMAS R. MULLEN, JR. SCHOLARSHIP FUND

Established April 5, 1949, by gift of T. R. Mullen in memory of his son; the income to be used for scholarship assistance to students in the College of Engineering. Preference is to be given students who are children of employees of the Lehigh Structural Steel Company or others nominated by the Company. Several awards are available each year.

JONES SCHOLARSHIP FUND

Established in 1951 by Edwin L. Jones, Sr., '12; Annabel Lambeth Jones, '12; Edwin L. Jones, Jr., '48; Lucille Finch Jones; and the J. A. Jones Construction Company in memory of James Addison Jones and Raymond A. Jones; a portion of the income to be used for scholarship aid to worthy and qualified students in the College of Engineering.

WESTINGHOUSE ACHIEVEMENT SCHOLARSHIP IN ENGINEERING

Established in 1954 by the Westinghouse Educational Foundation. One award of $500.00 per year is made to a junior in electrical or mechanical engineering on the basis of high academic achievement and demonstrated qualities of leadership. Selection of the recipient is made by representatives of the faculty of the College of Engineering and the University Scholarship Committee.

AMERICAN VISCOSE CORPORATION SCHOLARSHIP IN ENGINEERING

Established in 1954 by the American Viscose Corporation. One award of $500.00 per year is made to a junior or senior in the College of Engineering. Selection of the recipient is made on the basis of academic record and contributions to the program of the College.

Duke University participates in several other industry scholarship programs. Several of these awards for which freshmen may apply are assigned to engineering students annually although they are not restricted to students in this field of study. Among the available awards are the General Motors Scholarships, the Texas Company Scholarships, and the Western Electric Company Scholarships.

Students who wish additional detailed information about these awards and other scholarship, loan, or employment opportunities should refer to the *Bulletin of Undergraduate Instruction* or write to the Executive Secretary, The Scholarship Committee, Duke University, Durham, North Carolina.

Graduate Tuition and Fees

The following table shows the general fees and charges collected from all graduate students. All fees for each semester are due and

payable, unless otherwise specified, at the time of registration for that semester. No student is admitted to classes until arrangements have been made with the Treasurer of the University for the settlement of fees.

Tuition and general fees* ($26.00 per unit)	$487.50
Athletic Fee, not including federal tax, optional, per year, payable in the fall semester	10.00
Room rent (See detailed statement p. 44.)	
Fee for Microfilming, payable by candidates for a doctoral degree when the dissertation is presented to the Graduate Office after the final examination	25.00

* General fees, in lieu of most special charges, include the following fees: Matriculation, Medical, Library, Damage, Commencement, Diploma, and an average of the Laboratory and Materials Fees.

Tuition and fees for a full semester program of 15 units amount to $390. For a part program, tuition and fees are computed at the rate of $26 per unit.

SPECIAL FEES FOR TEACHERS AND OTHERS: The Graduate School recognizes a special obligation to encourage the following types of students in their professional and personal advancement: (1) members of the faculties of the neighboring public schools and colleges, currently engaged in full-time teaching while taking courses in the Graduate School, (2) ministers of neighboring churches, (3) wives of Duke faculty members, (4) full-time employees of Duke University who are paid on a monthly basis throughout the year. The reduced fees do not apply to teachers and ministers while on leave of absence, nor to holders of fellowships, scholarships, or assistantships, nor to part-time instructors.

Persons eligible for the reduced fee must meet the admission standards required of all graduate students and must be admitted to the Graduate School. They may enroll for one or two courses per semester (in no case totaling more than 7 units) upon the payment of a fee of $5.00 for registration for each semester and a tuition fee of $10.00 per unit of credit. Such students are not covered by Student Health provisions.

WITHDRAWAL FROM A COURSE OR FROM THE GRADUATE SCHOOL: Arrangements made with the Treasurer to prorate tuition and fees due cannot imply that the full amount is not due and payable. A student who after 14 days following the date of registration withdraws from a course or from the Graduate School is liable for payment of full tuition fees and room rent.

STIPENDS AND INCOME TAX: Ordinarily stipends awarded under fellowships and scholarships are not subject to income tax. However, a portion of the award to graduate assistants may be subject to tax. The Graduate Office will supply detailed information.

Graduate Assistance

Each of the three Departments of Engineering makes available to qualified graduate students a number of part-time instructorships that pay $2400 for nine months. A holder of one of these instructorships may carry three fifths of a normal load of graduate courses. For further information concerning these instructorships, write to the Chairman of the appropriate Department of Engineering, Duke University, Durham, North Carolina.

For the encouragement and financial assistance of graduate students of marked ability, the University has established a considerable number of fellowships. For information concerning fellowships, write to the Dean of the Graduate School, Duke University, Durham, North Carolina.

Living Accommodations

Undergraduate students are required to live in the residence houses unless they are married or are living with parents or relatives. Any exception must be approved by the Dean. Rooms are rented for a period of not less than one semester. No refund will be made except for involuntary withdrawal to enter the armed services. Such refunds will be made in accordance with the University's established schedule.

In the residence houses for undergraduate, graduate and professional men, the rental charge for a single room is $250.00 for the academic year or $125.00 for each semester. The rental charge for a double room is $400.00 for the academic year or $200.00 for each occupant, or $100.00 per semester for each occupant.

In the residence houses for undergraduate, graduate and professional women on the Woman's College Campus, the rental charge for a single room is $275.00 for the academic year or $137.50 for each semester. The rental charge for a double room is $450.00 for the academic year or $225.00 for each occupant, or $112.50 per semester for each occupant.

Regulations governing the occupancy of rooms will be supplied directly from the Housing Bureau when the reservations are made. Occupants are expected to abide by these regulations.

For details concerning living accommodations, see the *Bulletin of Undergraduate Instruction* or the *Bulletin of the Graduate School of Arts and Sciences.*

Dining Service

Dining facilities in the Duke University Union on the West Campus include three cafeterias with multiple-choice menus, and the Oak

Room where full meals and *a la carte* items are served. The cost for the academic year ranges from $450.00 upward, depending on the tastes of the individual. In the Men's Graduate Center there is a cafeteria with multiple-choice menus and a Coffee Lounge, where sodas and sandwiches are served from 11:30 A.M. to 11:00 P.M. The prices in these dining rooms are the same as on the West Campus.

On the East Campus dining halls are located in the Woman's College Union and in Gilbert-Addoms Dormitory. Resident women take their meals in these halls. The charge for board is $225.00 per semester, payable at the time of registration.

Due to the large number of those served in the dining halls, it is not possible to arrange special diets for individual students

Reserve Officers Training Corps

THROUGH the Naval and Air Force Reserve Officers Training program the University is cooperating with the Department of Defense in the effort to provide a steady supply of well-educated officers for the active and reserve forces of the nation.

The Naval Reserve Officers Training Corps

There are two basic programs through which students can qualify for Naval commissions upon graduation: one, the Regular Naval Reserve Officers Training Corps program, provides a maximum of four years in the University largely at government expense, followed by a temporary commission in the regular Navy or Marine Corps; the other, the Contract program, leads to a commission in the Naval Reserve or the U. S. Marine Corps Reserve.

The Air Force Reserve Officers Training Corps

The unit functions as a regular department of instruction known as the Department of Air Science. It selects and trains students who possess the requisite character, intelligence, desire, and sense of duty to become Air Force officers.

The Bureau of Testing and Guidance

THE University maintains a Bureau of Testing and Guidance which provides a program of educational, vocational, and personal counseling for students. In addition, the Bureau administers special group testing programs for University schools and departments and serves as the local testing center for a wide variety of national testing programs. The Bureau also carries on programs of research in the field of measurement and counseling. Although the counseling, testing, and research services of the Bureau are designed primarily to meet the needs of the students, the faculty, and the staff of Duke University, these services are made available to individuals and organizations outside the University as its facilities permit. Requests for further information should be addressed to the Director, Bureau of Testing and Guidance, Duke University, Durham, N. C.

Appointments Office

THE APPOINTMENTS OFFICE is a service agency designed to aid graduates in solving the problem of post-college employment. Its primary function is to serve as an intermediary between students and prospective employers. It acquaints students with possibilities in business and professional fields, it assembles comprehensive records on each registrant and makes these records available to appropriate representatives, and it arranges interviews with prospective employers. The data assembled for individual records include academic achievement, training, experience, extracurricular activities, and honors. On occasion additional information of a special nature is secured. Confidential letters of recommendation are incorporated in the file of each registrant. The Office initiates contacts for students or cooperates with students who make contacts through personal efforts or through various departments of the University. It aids the registrant in directing his search to a field appropriate to his aptitude, training, and interest.

There are two major divisions of the Office: the Commercial Division, which handles all matters involving contacts with business and professional areas not related to formal education; and the Educational Division, which concerns itself with teaching and school administration positions at all levels. Students and alumni may register with either or both of these divisions.

The Office receives more calls for qualified personnel than it can supply from its registrants. It is to the mutual advantage of the students and the Office that a complete record of registrants be assembled by the fall of the senior year.

Undergraduate Registration and Academic Regulations

ORIENTATION PROGRAM: All freshmen and transfer students are required to participate in the activities of Orientation Week. The program includes general ability, achievement, and placement tests, orientation lectures, physical examinations, social events, special religious services, registration, and matriculation.

The University considers the planning of a course of study to be of primary importance. Perhaps the most significant moments of Orientation Week, therefore, are those which a new student spends with his faculty adviser. With the results of the tests available to them, the adviser and the student plan a course of study adapted to the ability, achievements, and goals of the individual student. New students who miss the whole or a part of the Orientation Program place themselves at a serious disadvantage at the very outset of their college career.

ENROLLMENT AND REGISTRATION: Students in residence are required to submit to the Dean of the College, not later than the date of the spring registration, cards showing their selection of courses for the following year. An advance deposit of $25.00 is required before the card may be submitted. These cards, approved by the Dean, are filed for permanent record in the Central Records Office. Students who do not select their courses for the following year at the time appointed must be readmitted to the College by reapplication to the Director of Admissions. Students whose course cards have been approved in the spring may enroll by mail during the summer. The same regulations, with the exception of the advance deposit, apply to registration for the spring semester.

Students who register in either semester at a date later than that prescribed in the calendar of this Bulletin must pay to the Treasurer a fee of $5.00. They are counted as absent in the work they have missed in the courses to which they are admitted, and these absences carry the same penalty as do other absences from the course. Changes in courses for reasons not arising within the University require a payment of $1.00 for each change made. No course may be elected later than one week after the opening of the semester, and no student may be admitted late to any class without an enrollment card.

General Undergraduate Academic Regulations

QUANTITY CREDIT AND COURSE LOAD: The term of credit used is the semester hour, which signifies one recitation a week throughout the semester. Three hours of laboratory work are equivalent to one hour of class work. Two semesters of 17 weeks each constitute the academic year. For the degree of Bachelor of Science in Engineering, credit for a minimum of 148 semester hours is required.

In engineering the normal load is 17-19 semester hours, exclusive of physical education. No student is permitted to take less than 14 semester hours of work without special permission from the Dean or to take more than the normal load of work unless his average grade in the preceding semester is higher than C.

QUALITY CREDIT: The requirements for the degree are computed in semester hours and in quality points. Quality points are earned by a student on the basis of his grades: for an A he receives four quality points for each semester hour; for a B, three quality points for each semester hour; for a C, two quality points for each semester hour; for a D, one quality point for each semester hour; for an F, no quality points. Credit for at least 296 quality points is required for a degree in engineering.

REQUIREMENTS FOR CONTINUATION IN COLLEGE AND FOR GRADUATION FROM COLLEGE: To continue in college and to graduate, a student must, in addition to the requirements listed elsewhere in this Bulletin, pass a minimum number of semester hours, achieve a specified quality point ratio, and in the case of graduation earn a minimum number of quality points. The quality point ratio is calculated by dividing the accumulated number of quality points earned by the accumulated number of semester hours carried (not semester hours passed). These requirements are listed in the following table:

For continuation from	*The minimum requirement is*
The first to the second year	18 s.h. credit and a q.p.r. of 1.2
The second to the third year	42 s.h. credit and a q.p.r. of 1.4
The third to the fourth year	66 s.h. credit and a q.p.r. of 1.6
The fourth to fifth year, if needed	90 s.h. credit and a q.p.r. of 1.75

For graduation from	*The minimum requirement is*
Trinity and the Woman's College	124 s.h., 248 q.p. and a q.p.r. of 1.9
The College of Engineering	148 s.h., 296 q.p., a q.p.r. of 1.9 and a q.p.r. of 2.0 in senior work*

* A minimum average grade of C in all courses taken in the last year, combined with all courses designated for the senior year in the particular engineering curriculum.

Since the semester hour requirement for graduation in engineering exceeds the requirement of the liberal arts colleges, the standards may be adjusted to meet the special requirement of the College. Moreover,

application of these standards is based on the courses required in the engineering curriculum.

REPORTS: Reports on proficiency in academic work are sent to parents or guardians after the examinations at the end of each semester. In addition, reports on freshmen are mailed at each mid-semester period.

DISMISSAL: In addition to the qualitative standards listed above, students must pass a minimum number of hours each semester. Freshmen must pass at least 6 semester hours of work in their first semester and 18 semester hours in their first year; all other students must pass at least 9 semester hours each semester excluding required physical education credits in each case. The University may require a student whose record is considered unsatisfactory to withdraw although he has met the minimum requirements set forth in this paragraph.

ACADEMIC CLASS STANDING: *To be classified as a sophomore,* a student must have to his credit at least 30 semester hours and 60 quality points and must have passed certain specially designated courses of the freshman engineering curriculum. *To be classified as a junior,* he must have to his credit at least 68 semester hours and 136 quality points and must have passed certain specially designated courses of the sophomore departmental engineering curriculum. *To be classified as a senior,* he must have to his credit at least 106 semester hours and a quality point ratio of 1.75 and must have passed certain specially designated courses of the junior departmental engineering curriculum.

RESIDENCE REQUIREMENT: A minimum of 36 semester hours of senior-level work in the College of Engineering must be earned in residence. A student who meets this requirement but who still lacks six to eight semester hours in final fulfillment of requirements may take this work in another institution of approved standing provided the course is approved by the chairman of the department concerned and by the Dean.

Grading, Attendance, and Examinations

GRADING: Final grades are reported to indicate passing or failing work in designated courses. Final grades are:

(1) *Passing.* Passing grades are A, exceptional; B, superior; C, average; and D, low pass.

(2) *Failing.* A grade of F indicates that the student has failed the course and that in order to receive credit for the course he must repeat the work in class.

Special symbols are used to indicate the following:

(1) *Absence from the final examination.* In all cases in which the student is absent from a final examination, he receives an X in place of a final grade. If he does not present an acceptable explanation for his absence to the Dean's office within 48 hours after the scheduled time for the examination, the X is converted to an F. A student absent from examination, if the absence has been excused by the Dean, may receive an examination upon payment of a fee of $5.00 to the Treasurer of the University. The instructor concerned arranges for the examination in cases where absences are excused. An X must be cleared by the end of the semester following the examination missed.

(2) *Incomplete work.* If because of illness or other emergency a student's work in a course is incomplete, he may receive an I for the course instead of a final grade. Incomplete courses must be completed before the close of the succeeding semester; otherwise, the I is recorded as F and the course must be repeated in class if the student is to receive credit for it. In case a student whose work is incomplete is also absent from a final examination, he receives an X for the course.

(3) *Withdrawal.* The letter W is used to indicate official withdrawal from a course. If a student drops a course without permission from the Dean, the grade for that course is recorded as F. If he drops with permission a course in which he is failing, the grade for that course is recorded as F unless, in the judgment of the Dean, circumstances do not justify this penalty.

ATTENDANCE: Regular and punctual attendance in class work is expected of all students. Weekly reports of all absences are made by each instructor and filed in the absence office. No instructor has the authority to excuse a student from class attendance; it is his duty to report all absences and tardies.

The requirements for continuation in college and for graduation from college emphasize the desirability of assumption by the student of responsibility for class attendance. Controls are exercised, and responsibility is placed on the student.

(1) *General regulations for all students:*

One unexcused absence per semester hour without penalty is allowed for personal obligations.

The first three tardies in a given course are counted as one absence. Thereafter, each additional tardy is counted as one additional absence.

Absences due to illness when certified by a proper medical official will be excused. Absences due to authorized representation of the University may be excused. Officials in charge of groups representing the University are required to submit names of those persons to be excused to the Dean's office 48 hours in advance of the hour

when their absences are to commence. Absences due to individual and personal reasons will not be excused.

All absences immediately before and after announced holidays are counted as regular absences and they result in a loss of two quality points for each absence in each class. Unexcused consecutive absences, whether excessive or not, result in the loss of quality points as in the case of unexcused excessive absences. Each excessive or consecutive absence results in the loss of quality points as follows: one quality point for the first absence, two additional for the second, and three additional for the third. When the third unexcused excessive or consecutive absence occurs, the student is debarred from the course with a loss of six quality points and an F in the course. When the student has incurred 12 absences, excused and unexcused, in any course he is required to drop the course unless the instructor and the dean concerned grant special permission for him to continue in the course.

When a student's course load is reduced, on account of excessive absences, to less than 12 semester hours, he is required to withdraw from the University.

(2) *Special regulations for upperclass students with academic averages of B or above:*

Although responsibility for punctual and regular class attendance is placed upon the individual student, all sophomore, junior, and senior students who, in a normal schedule, earn a grade average of 3.0 or above in the preceding semester will be subject to no fixed absence limitation. However, for absences before and after announced holidays two quality points are deducted for each absence in each class. Instructors are expected to refer to the Dean for appropriate action any student who in their opinion is causing his work or that of the class to suffer because of absences or tardies.

EXAMINATIONS: Final examinations are held in all subjects in January and May.

Deficiencies in English Composition

Whenever the work of a student in any course is unsatisfactory because of errors in English, the instructor may report the student to the Dean, who will require him to enroll in remedial English until, in the opinion of the Remedial Laboratory, the deficiency is removed.

All instructors are requested to advise their students each semester concerning this regulation.

Graduate Registration and Academic Regulations

WHO MUST REGISTER: (1) All students who enter course work or residence for credit; (2) all students who have completed minimum requirements for an advanced degree, but continue to use the facilities of the University in their research; (3) all students who wish merely to audit a course or courses.

REGISTRATION: After the applicant has received notification of his admission to the Graduate School and has returned his statement of acceptance of admission, he may present himself for registration. During the registration periods, announced in the *Bulletin,* he first confers with the Director of Graduate Studies of his major department, who prepares a course card, listing the course work to be taken during the semester. The student then presents this course card to the Registrar's Office, which enrolls him officially in his courses.

LATE REGISTRATION: All students are expected to register at the time stated in the *Bulletin. Those registering late are subject to a late registration fee of five dollars.*

CHANGE OF REGISTRATION: Within a period of 14 days from the specified day of registration, students may change their schedules with the approval of the Director of Graduate Studies.

Credits and Grades

Although ideally graduate study is principally individual reading, research, and laboratory experimentation under guidance, academic progress in the United States is generally measured and recorded in terms of course hours and credits. Peculiar to graduate study is the term *residence*, also generally measured in hours, to designate individual study apart from courses, such as writing a thesis and preparing for general examinations. Beginning in September 1959 in this Graduate School credit for courses and seminars, research, and residence, and corresponding tuition and fees has been stated in terms of UNITS. According to conventional measurement ONE UNIT is equivalent to ONE SEMESTER HOUR. Thus a course previously described as carrying a credit of 3 s.h. will now carry a credit of 3 units.

CREDITS EARNED OUTSIDE THIS GRADUATE SCHOOL

(1) *Graduate Credit Earned before the Bachelor's Degree Is Granted.* Ordinarily no credit will be allowed for graduate courses earned before a student has been awarded his A.B. or B.S. degree. However, an undergraduate student at Duke University who, at the beginning of his final semester, lacks no more than 9 semester hours of fulfilling the requirements for the A.B. or B.S. degree, may obtain permission from the Dean of the Graduate School to enroll for graduate courses sufficient to bring his total program to fifteen semester hours a week. Such graduate courses will be credited toward the M.S. degree, provided that the student meets the requirements for admission to the Graduate School, and that he is duly registered in the Graduate School at the beginning of that term.

(2) *Transfer of Graduate Credits.* Credit for graduate course work earned at another institution will be determined only after a student has spent one semester at Duke University. After completing his first semester, the student should file a request that his credits be reviewed and a decision made.

(3) *Reciprocal Agreement with the Consolidated University of North Carolina.* Under a plan of co-operation between the Consolidated University of North Carolina and Duke University, students regularly enrolled in the Graduate Schools of the Consolidated University during the regular academic year, and paying full fees to that institution, may be admitted to a maximum of two courses per semester in the Graduate School of Duke University upon payment of a nominal registration fee of two dollars and of any other special fees regularly required of all students. Under the same arrangements, students in the Graduate School of Duke University may be admitted to course work at the Consolidated University of North Carolina. This arrangement is not in effect during Summer Sessions.

GRADES. Grades in the Graduate School are as follows: *E, G, S, F,* and *I*. *E* (exceptional) is the highest mark. *G* (good) and *S* (satisfactory) are the remaining passing marks. *F* (failing) is below passing, and *I* (incomplete) indicates that some portion of the student's work is lacking, for a satisfactory reason, at the time the grades are reported. The instructor who gives an *I* for a course specifies the date by which the student must have made up the deficiency. In no case may an extension be granted beyond one calendar year from the date the course ended. If the course is not completed, a statement of *No credit* is made upon the student's record.

COURSES PRIMARILY FOR UNDERGRADUATES. Students granted provisional admission may on occasion be required as part of their program to take undergraduate courses as prerequisites to

continued graduate study. Undergraduate courses thus taken and others elected by the student will carry no graduate credit.

In exceptional cases, 100-level courses outside the major department may be taken for graduate credit to a maximum of two one-semester courses or one year-course not exceeding a total of 8 units, when approved by the Directors of Graduate Studies in the major department and in the department in which the course is listed and the supervisor of the program.

NORMAL PROGRAMS. Normally graduate students who do not carry teaching or assisting duties carry a full load of graduate work until the requirements of the several degrees are met. A full load is 15 units a semester or 30 units for the academic year. Six units is a maximum load for one term of the Summer Session.

TRANSCRIPT. A student who wishes to transfer his credits from Duke University to another institution is entitled to one free transcript of his record. A fee of one dollar, payable in advance, is charged for each additional copy. Requests are directed to the Central Records Office.

SIZE OF CLASSES. Classes which carry graduate credit are limited in size to twenty-five students. In exceptional cases this regulation may be modified, but only by permission of the Executive Committee of the Graduate School Faculty on the recommendation of the department concerned. When courses numbered 200 to 299 carry graduate credit, they may include no more than three juniors.

TIME LIMITS FOR COMPLETION OF MASTER'S DEGREE. The candidate for the master's degree who is in residence for consecutive academic years should complete all requirements for the degree within two calendar years from the date of his first registration in the Graduate School. Any candidate must complete all requirements within six calendar years of his first registration.

Credits earned over a long period of time cannot be credited toward a degree.

Honors, Prizes, Activities

Undergraduate Honors

GRADUATION WITH HONORS

To be eligible for Honors, a student must earn, during the year, credit for at least the minimum academic load permitted by the College. All semester hours on which a student receives a grade are counted in the determination of Honors. Students in the freshman, sophomore, and junior classes who earn an average of at least 3.5 quality points per semester hour are given Honors.

Students who have completed a minimum in residence of 90 semester hours in Duke University are eligible for general Honors at graduation. Those who earn an average of at least 3.5 quality points per semester hour are recommended for a degree *magna cum laude.* Those who earn an average of at least 3.75 quality points per semester hour are recommended for a degree *summa cum laude.*

GRADUATION WITH DEPARTMENTAL DISTINCTION

Graduation with Distinction in Civil, Electrical, or Mechanical Engineering is awarded to the student who in the opinion of the department and of a special committee of the faculty has demonstrated exceptional achievement in the area of his special interest.

Prizes

The Tau Beta Pi Prize: The North Carolina Gamma Chapter of Tau Beta Pi, engineering national honor society, awards each year a suitable prize, such as an engineering handbook, to a sophomore student in engineering for outstanding scholastic achievement during the freshman year.

The American Society of Civil Engineers Prize: Consists of a certificate of award and a one year's payment of dues in the American Society of Civil Engineers. Awards are made annually by the North Carolina Chapter to the two outstanding seniors in civil engineering based on the recommendation of the faculty of the Civil Engineering Department. The basis for selection is the student's scholastic record, his contribution to the Student Chapter, and his participation in other college activities and organizations.

The George Sherrerd III Memorial Award in Electrical Engineering was established in 1958 by the parents of George Sherrerd III, a graduate of the class of 1955, to recognize outstanding undergraduate scholarship. This award, consisting of the income from a fund of $5000.00, is made annually to that senior student in Electrical Engineering who, in the opinion of the Electrical Engineering faculty, has attained the highest level of scholastic achievement in all subjects and simultaneously has rendered significant service to the College of Engineering and the

University at large. The recipient's name is inscribed on a plaque displayed in the Engineering Building.

The Charles Ernest Seager Memorial Award, established in 1958 by the widow and friends of Charles Ernest Seager, a graduate of the class of 1955, recognizes outstanding achievement in the annual Student Prize Paper Contest of the Duke Branch of the American Institute of Electrical Engineers. The award consists of inscribing the name of the contest winner on a plaque displayed in the Engineering Building.

The Milmow Prize: Consists of a certificate of award and a one year's payment of dues in the American Institute of Electrical Engineers for the membership year in which the honoree is awarded his baccalaureate degree. It is awarded annually to that student from North or South Carolina graduating in the Department of Electrical Engineering who, in the opinion of the faculty of that department and as shown by his grades, has made the most progress in electrical engineering during his last year in college.

Julia Dale Prize in Mathematics: A prize of books given annually to the undergraduate who shows the greatest proficiency in the study of the calculus.

The William Senhauser Prize: Given by the mother of William Senhauser in memory of her son, a member of the class of 1942, who lost his life in the Pacific Theatre of War on August 4, 1944. The award is made annually to the sophomore or junior in Trinity College or the College of Engineering who has made the greatest contribution through participation and leadership in intramural sports. The winner of this prize is chosen by a committee selected by the President of the University.

Activities

STUDENT BRANCHES OF ENGINEERING PROFESSIONAL SOCIETIES

The three Departments of the College of Engineering support student branches of the following national professional engineering societies:

American Institute of Electrical Engineers and Institute of Radio Engineers, American Society of Civil Engineers, American Society of Mechanical Engineers.

ENGINEERS' STUDENT COUNCIL

The Engineers' Student Council, composed of approximately 20 members from the various organizations and classes in the engineering student body, coordinates the activities of all student organizations in the College of Engineering. The Council acts to represent the interests of the students in their relationships with the public, the faculty, and the administration. The Council is responsible for such activities as the Engineers' Show, Christmas decorations, homecoming displays, supervision of the student Lounge, social events, and the Engineers Guidance Council.

ENGINEERING STUDENT PUBLICATION

The DukEngineer, official student-published magazine of the College of Engineering, which appears twice each semester, contains

articles on technical and semitechnical topics and other matters of interest in the College.

ENGINEERS' RADIO ASSOCIATION

Membership in the Engineers' Radio Association is open to all students of the College of Engineering who have an interest in amateur radio. The Association operates amateur radio station W4AHY and conducts code and theory classes for members who desire to obtain a Federal Communications Commission license.

ENGINEERING LECTURE SERIES

In addition to his participation in the student branches of the national professional engineering societies, the student has the opportunity of additional development through the *Engineering Lecture Series.* The general function of the series is to provide stimulating lectures by outstanding members of the engineering profession.

GENERAL ACTIVITIES OPEN TO ENGINEERS

Air Force Club; Arnold Air Society; Commodore Club (NROTC Social Organization); Independent Dormitory Council; Pep Board; Publications Board; Radio Council; Student Union Board of Governors; The Young Men's or Young Women's Christian Association; Debate Council; Duke Players; Duke University Religious Council; Duke University Handbook and Directory; Freshman Advisory Councils; Hoof 'n' Horn Club; Interfraternity Council; Intramural Athletic Department; Chemistry Club; Shoe and Slipper Club; Student Religious Council; Town Men's or Girls' Club; Young Democrats Club; Young Republicans Club; Chamber Orchestra; Concert Band; Marching Band; Symphony Orchestra; Madrigal Singers; Men's or Women's Glee Club; The University Chapel Choir; *The Archive* (monthly); *Chanticleer* (annual); *Chronicle* (triweekly); The Student Broadcasting System (WDBS).

ENGINEERING HONOR SOCIETIES

Tau Beta Pi—engineering national honor society—Gamma chapter of North Carolina.

Eta Kappa Nu—electrical engineering national honor society—Duke University Branch of Eta chapter.

Pi Tau Sigma—mechanical engineering national honor society—Pi Iota chapter.

Order of St. Patrick—honor society recognizing leadership in engineering student activities.

GENERAL HONORARY SOCIETIES

In addition to the national engineering student honor societies, students of the College of Engineering are eligible for membership in the following national honor societies:

Phi Beta Kappa (Scholarship); *Sigma Xi* (Scientific Research); *Omicron Delta Kappa* (Leadership—Men); *Phi Eta Sigma* (Freshman Scholarship); *Pi Mu Epsilon* (Mathematics); *Sigma Pi Sigma* (Physics); *Sigma Delta Pi* (Spanish); *Tau Kappa Alpha* (Forensic); *Tau Psi Omega* (French); *Theta Alpha Phi* (Dramatic); *Delta Phi Alpha* (German); *Alpha Kappa Psi* (Economics); *Alpha Phi Omega* (National Service Fraternity).

Local honor societies for which engineers are eligible include: *Red Friars* (Leadership); *Beta Omega Sigma* (Sophomore Leadership).

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TO DURHAM
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SARAH P. DUKE
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TO 751
TURN LEFT FOR
CHAPEL HILL
HOPE VALLEY
AND MOTELS
TO DURHAM
TO EAST
CAMPUS
(WOMEN'S
COLLEGE)

BULLETIN OF DUKE UNIVERSITY

INFORMATION FOR PROSPECTIVE STUDENTS

HE UNDERGRADUATE COLLEGES

Volume 32 March 1960 Number 5

Annual Bulletins

For Bulletin of Information for Prospective Students, apply to *The Registrar,* Duke University, Durham, N. C.

For Bulletin of Undergraduate Instruction, apply to *The Registrar,* Duke University, Durham, N. C.

For Bulletin of the College of Engineering, apply to *The Registrar,* Duke University, Durham, N. C.

For Bulletin of The Graduate School of Arts and Sciences, apply to *The Dean of the Graduate School,* Duke University, Durham, N. C.

For Bulletin of The School of Forestry, apply to *The Dean of the School of Forestry,* Duke University, Durham, N. C.

For Bulletin of The School of Law, apply to *The Dean of the School of Law,* Duke University, Durham, N. C.

For Bulletin of The School of Medicine, apply to *The Dean of the School of Medicine,* Duke University, Durham, N. C.

For Bulletin of The School of Nursing, apply to *The Dean of the School of Nursing,* Duke University, Durham, N. C.

For Bulletin of The Divinity School, apply to *The Dean of the Divinity School,* Duke University, Durham, N. C.

For Bulletin of The Summer Session, apply to *The Director of the Summer Session,* Duke University, Durham, N. C.

For General Bulletin of Duke University, apply to *The Registrar,* Duke University, Durham, N. C.

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DUKE UNIVERSITY

INFORMATION FOR PROSPECTIVE STUDENTS

UNDERGRADUATE COLLEGES

Durham, North Carolina
March, 1960

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Vice President in the Division of Public Relations

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University Registrar

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Calendar of the Colleges

1961

September 14 . . . . . Orientation begins: Assemblies for all new students entering Trinity College, the Woman's College, and the College of Engineering

September 18 . . . . Registration and matriculation of all students of Trinity College, the Woman's College, and the College of Engineering, who have not pre-registered

September 20 . . . . . Final registration of pre-registered students

September 21 . . . . . Fall semester classes begin

October 24 . . . . . Examination in English Usage

November 4 . . . . . Last day for reporting mid-semester grades

November 22 . . . . . Thanksgiving recess begins

November 27 . . . . . Classes are resumed

December 11 . . . . . Founders' Day

December 20 . . . . . Christmas recess begins

1962

January 3 . . . . . Classes are resumed

January 13 . . . . . Fall semester classes end

January 16 . . . . . Final examinations begin

January 26 . . . . . Final examinations end

January 30 . . . . Registration and matriculation of new students

January 31 . . . Last day for matriculation for the spring semester

February 1 . . . . . Spring semester classes begin

March 14 . . . . . Last day for reporting mid-semester grades

March 24 . . . . . Spring recess begins

April 2 . . . . . Classes are resumed

May 17 . . . . . Spring semester classes end

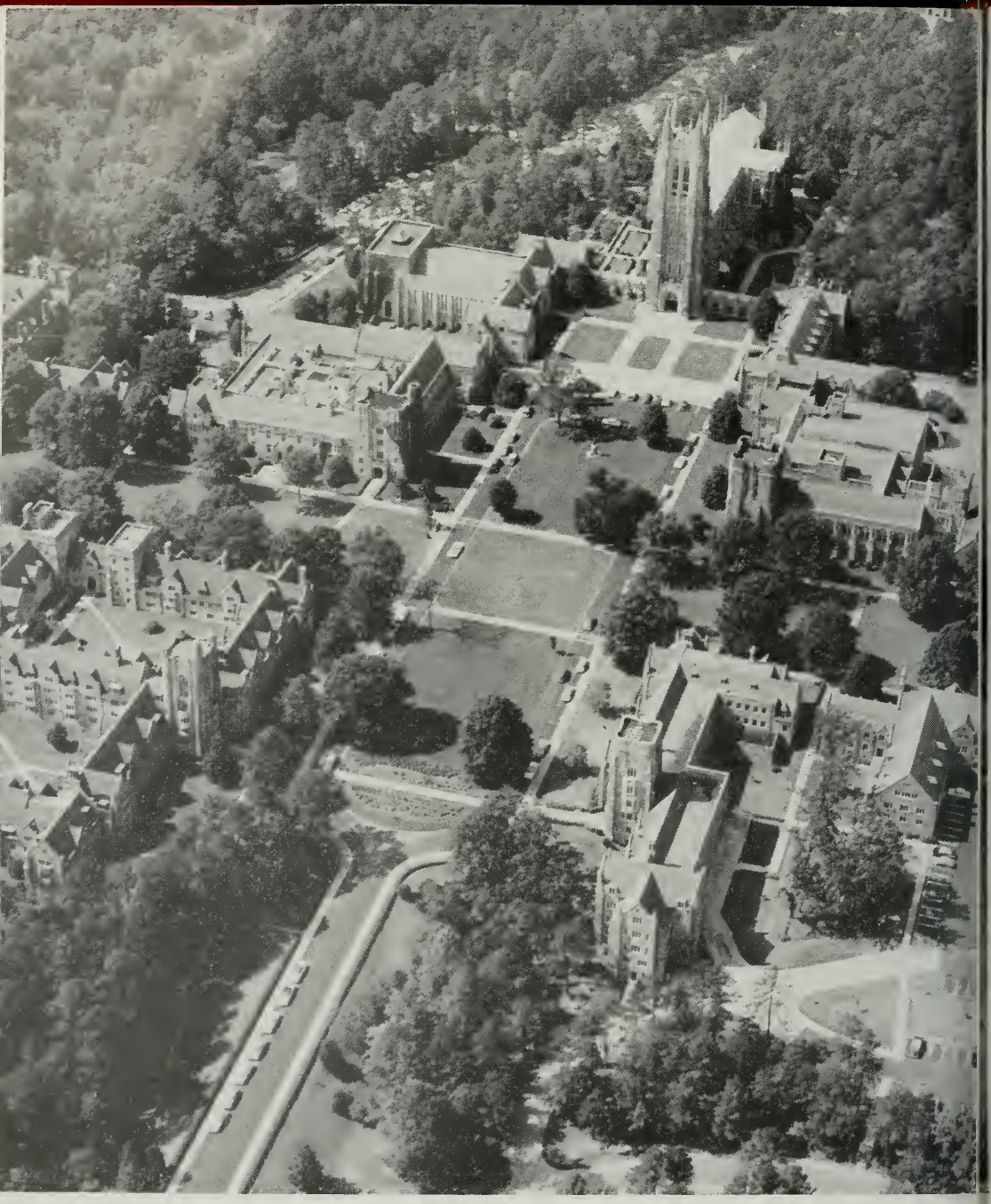
May 19 . . . . . Final examinations begin

May 30 . . . . . Final examinations end

June 2 . . . . . Commencement begins

June 3 . . . . . Commencement Sermon

June 4 . . . . . Graduating Exercises



An aeriol view of the central quodrongle of the West, or University, Campus. Extending to the left are residence houses for men and to the right closs rooms, libraries, and laboratories.

The University

Although Duke University as a corporate entity dates from 1924, its roots go back nearly a century and a quarter to the Union Institute, founded in 1838 in Randolph County. Dedicated to the erasing of ignorance and error and to the education of responsible citizens, the Institute grew slowly for a decade. In 1859 it was formally organized as Trinity College, which laid solid foundations for the future. When the college moved to the growing city of Durham in 1892, it was able to find increased support both from the Church and from individuals who were dedicated to the aims of liberal education. During the next three decades Trinity College drew to its faculty men of imagination, courage, and intellectual achievement who, in an atmosphere of academic freedom, created a notable liberal arts college.

The transition from college to university dates from James B. Duke's Indenture of Trust in 1924, through which Duke University came into being. The core of the new University was already in existence. This was Trinity College, which was joined in the ensuing years by three other undergraduate colleges, the Woman's College in 1925, the College of Engineering in 1939, and the School of Nursing in 1953. In the meantime, a number of professional schools were established as part of the total University structure. In hardly more than a generation Duke University was to attain a position of educational leadership and importance, both regionally and nationally, which remains one of the remarkable stories in American higher education.

The undergraduate colleges exist as important parts of the University, which by modern standards is moderate in size: they enroll about 3500 students in the total population of about 5800. Though they share the same campuses with the professional schools and many of the same facilities, and participate in the wide range of activities and educational advantages possible in a university environment, each of the colleges has its separate identity; yet each is related to the others and to the University as a whole.

From college to university the basic principles have remained constant. The University motto, *Eruditio et Religio,* reflects a

fundamental faith in the union of knowledge and religion, the advancement of learning, the defense of scholarship, the love of freedom and truth, a spirit of tolerance, and a rendering of the greatest service to the individual, the state, the nation, and the church. Through changing generations of students the objective has been to encourage each individual to achieve to the extent of his capacities an understanding and appreciation of the world in which he lives, his relationship to it, his opportunities, and his responsibilities.

The undergraduate colleges of Duke University are concerned with developing the whole person. In classrooms, libraries, and laboratories they are concerned with his mental and moral development, in gymnasiums and on playing fields, with his physical growth, and in the Chapel and religious program, with his spiritual well being. Although the University has always been closely associated with the Methodist Church, it welcomes students of all faiths and encourages them to develop their spiritual lives in accordance with the tenets of their own creeds. The need of training for specialized professions and employments is recognized, but such training is incidental to a larger purpose. Through the variety of the subject matter, the insistence on a common core of fundamental courses, and an emphasis on a more intensive study of some selected subject, the colleges seek to give their students a knowledge and appreciation of world culture and at the same time to provide a foundation for careers in business and the professions.

Location

Duke University is situated in Durham, North Carolina, a city of about 85,000 population, 250 miles southwest of Washington, D. C., and 400 miles northeast of Atlanta, Georgia. From Washington, New York, and New England it may easily be reached by overnight trains of the Southern Railroad, or by air travel via Eastern Air Lines and Capital Air Lines. From the south and southwest both train and air services are available and frequent. From the Ohio Valley and the middle west frequent direct air travel is available via Eastern Air Lines from Chicago, Detroit, Cleveland, and via Piedmont Air Lines from Cincinnati, Louisville. By motor, Durham may be easily and pleasantly

reached by a varied network of Federal and state highways, chiefly U. S. 15, 501, and 70, and by the new Interstate Highway 85.

The University is located on a tract of nearly 8,000 acres of rolling, wooded land on the southwest fringe of the city. The Woman's College is a mile and a half distant, within the city, on its own campus of 110 acres.

The Faculty

It is the policy of the University to secure and to maintain a faculty of high competence in both teaching ability and research activity. In times of such rapid and far-reaching changes as we live in, teachers must ever be aware of new ideas, new climates of thought, new discoveries, whether they be in the sciences, in literature, or in philosophy. Their interest in and capacity for original investigation and their contribution to the ever-developing body of human knowledge help to bring to life the materials which they teach and to communicate to the college student both the excitement and the essential significance and value of learning. This double function of the scholar-teacher tends to ensure the broadest and deepest experience available to students. In general all ranks in the instructional staff are assigned to the beginning as well as to advanced students, so that Freshman students are taught by many of the most competent teachers and most experienced scholars.

Beyond the physical limits of the classroom many opportunities exist for those students who wish and can utilize, for their own educational purposes, informal and friendly relationships with faculty members. These may be established through the regular advisory system, through extracurricular informal discussion groups, through identity of interests.



The Woman's College Auditorium typifies the Georgian architecture of the East, or the Woman's College, Campus.

The Student Body

In establishing his educational trust in 1924, Mr. Duke requested that "great care and discrimination be exercised in admitting as students only those whose previous record shows a character, determination, and application evincing a wholesome and real ambition for life." Within the spirit of this request the admissions officers seek those students whose records and aptitudes promise a successful college experience and "who evince a wholesome and real ambition for life." Although its physical setting is in the Southeast, about half of the student body come from other sections of the nation and from foreign countries. Over 700 different public secondary schools and independent schools distributed over most of the states are represented in the entering class. Such a broadly representative group of students, chosen on merit through a selective process, ensures a cross-section of

social, economic, and religious background which provides a stimulating variety in attitudes and a consequent cosmopolitan atmosphere. Such variety itself serves an important educational purpose as provincial attitudes and prejudices erode away under the mutual respect and understanding engendered by the social and intellectual interchange possible in a large, varied student body. While high scholarship always remains an important criterion in the selection of students, it is in no instance the sole measure of a student's potential success in the colleges. This and other bases for selection are explained below.

Libraries and Laboratories

Since much of the educational work of a college is accomplished through books, excellent libraries become one of the most important elements in the college experience. Indeed, it may well be maintained that the library is the central, indispensable core of an educational institution. Early recognition of the need for great collections has enabled Duke to create a library of significant size and quality. The University library now ranks among the first 15 university libraries in the country, with collections totalling 1,400,000 books and 2,800,000 manuscripts. In addition and as part of the main collection, there are numerous school and departmental libraries: the Woman's College library, situated in the center of the Woman's campus, contains 120,000 volumes and periodicals; the College of Engineering library, 28,000 specialized volumes and 300 current periodicals; the Biology-Forestry, about 65,000; Physics-Math, 22,000; Chemistry, about 18,500 volumes.

As important as books are, they are not alone sufficient for a broad education in the modern world. Laboratories, equipment of all kinds, apparatus for teaching and research—these too are of great importance. Whether it be a Van de Graaff accelerator for work in nuclear physics, modern sensitive testing machinery for some phase of engineering, equipment for building new research devices on the frontiers of electronic experiment, digital computers for complicated mathematical formulae, microphotographic apparatus for study of cell growth and decay, or simple tape recorders for speech study and correction—all make their contributions to the complete education of the college student.



The tower and main entrance of the General University Library.

Admission

New students are admitted for the academic year at the opening of school in the fall. Only a very small number can be considered for admission in February.

Priority of application is not a factor in selection, but application early in the student's senior year of high school is desirable. Since all supporting, required documents for admission must be reviewed before final decisions can be made, it is necessary for the applicant to make certain that his credentials are complete by March 1. After this date the Committee on Admissions makes its selections; their decisions with respect to male applicants for Trinity College and the College of Engineering will be forwarded as soon as made. Candidates for admission to the Woman's College will be notified of decisions between April 15 and May 1.

The size of the entering classes is approximately as follows: Trinity, 550; College of Engineering, 175; Woman's College, 340; the School of Nursing, 95. Since about five thousand candidates normally apply, selection must be made on a competitive basis and upon a number of criteria. These include the quality of the transcript of official grades in the secondary school, rank in the graduating class, statement of school officials, the level of scores of the Scholastic Aptitude Test of the College Entrance Examination Board, the applicant's personal statement of his aims in college, the record of his extra-curricular interests and achievements.

Every applicant is required to take, not later than January of his senior year in secondary school, the Scholastic Aptitude Test of the College Entrance Examination Board. While the submission of scores on *achievement tests* of the College Entrance Examination Board is not required, an applicant should submit them if he has arranged to take such tests for other purposes. Although these are not a determining factor in the final decision of the Committee on Admissions, they provide added data upon which an even more careful decision can be based. Therefore, it is recommended that they be submitted.

Although there are no inflexible subject matter requirements, at least fifteen acceptable units of secondary school credit must be presented. Of these at least twelve must be in college preparatory

subjects: English, foreign language, history and social studies, mathematics, and physical or biological sciences. Applicants for the College of Engineering are advised to present four units of mathematics and at least one unit in physics or chemistry.

Prospective students are urged to broaden their reading outside of class during their senior year and to make the acquaintance of books and magazines that do not form part of the subject matter of their courses. At the same time, they should take every opportunity to increase their competence in writing. Those who cannot write simple, clear, grammatical English prose will be progressively at a serious disadvantage in the competition for admission and also in the general work of the Freshman year. Careful attention to correctness in English in correspondence and on application blanks cannot be too seriously stressed for candidates for admission.

Application forms and instructions regarding procedure and necessary documents to be included will be sent upon request to the Registrar, Duke University, Durham, North Carolina. A non-refundable processing fee of $10.00 must accompany the submission of the full application form.

Admission to Advanced Standing

Admission by transfer from other institutions may be arranged for a limited number of students, under certain well-defined regulations. All such candidates must submit official transcripts of all work completed at other schools, accompanied by a statement of honorable dismissal, and scores on the Scholastic Aptitude Test of the College Entrance Examination Board. An overall grade average of at least C must have been earned on work previously completed; courses on which a grade less than C has been earned cannot be accepted for transfer credit. Normally students should not apply for transfer beyond admission to the junior class, for the values in education which they envisage in the desire to transfer to Duke can not be realized within one year. Further detailed regulations for admission by transfer may be obtained from the Registrar.

A small number of special students of mature age may be admitted for such courses of instruction as their earlier training

and experience may qualify them to take. They may not be accepted, however, as candidates for a degree in a regular course unless they are able to meet all normal requirements for admission which apply to all beginning students.

Former students who have for various reasons withdrawn from college and who wish to continue their collegiate careers should apply to the Registrar, with a detailed account of their activities since withdrawal from college.

Advanced Placement and Credit

In order to recognize superior preparation of entering students and to provide flexibility in the freshman program of studies, the colleges have for many years given placement tests during Orientation Week. On the basis of the student's performance on these tests, he is assigned to sections in certain departments which are expected to do work consonant with his demonstrated achievement or his potential ability in the subject matter. Placement in advanced sections allows the able student to omit certain preliminary courses and to take work for which his interests and aptitudes fit him. While no credit toward graduation is given him for the course or courses omitted, he is able to broaden the base of his elective courses in subsequent years of his college experience.

Advanced Placement course credit is, however, possible for those students who have taken, in secondary school, an advanced placement course, and have taken in May of the senior year the regularly scheduled Advanced Placement Program tests administered by the College Entrance Exmination Board. Upon submission of these results, evaluations are made by the subject matter departments and by the appropriate deans. If the quality of the tests is acceptable, recommendation for course credit may be made for one or two semesters in each subject area represented by the Advanced Placement Program scores.

The colleges are alert to identify the superior student at the beginning of his college career and to encourage him to realize his intellectual potentialities. To this end the colleges provide certain programs, in addition to advanced placement and advanced placement credit. Although every freshman is included in an advisory program, a special advisory group has been created, to



Preparing to welcome a new class. Upperclassmen arrive early to help welcome and orient to the campus each incoming class.

which are invited a number of the entering class. These students are assigned Faculty Advisors whose intellectual and academic interests are congenial to those of the student. By individual counseling, some students are assigned to special restricted seminar groups, and some others are urged to undertake (under the guidance of individual faculty members) independent reading and study programs which permit them to omit certain introductory courses and to proceed to more comprehensive courses, upon a demonstration of their readiness.

College Expenses

The annual expenditures of Duke undergraduates vary considerably. The basic expenses may be clearly determined, however, and fall into two major groups: (1) Tuition and fee charges, room rent, and other items paid directly to the University Bursar; (2) Books, laundry, travel, clothing, organizational dues, recreation, and incidentals which are arranged for by the student and paid for on a cash basis. There are variations in the room charge and board expense for undergraduate men and undergraduate women.

In order to provide reasonably accurate information for the consideration of prospective students and their parents, the following budgets are suggested:

	Undergraduate Men		*Undergraduate Women*	
Tuition	$ 850.00		$ 850.00	
General Fee	150.00		150.00	
Room Rent	200.00	(Double Room)	225.00	(Double Room)
Board	500.00	(Cafeteria Estimate)	450.00	(Board Rate)
Laundry	75.00		75.00	
Books	50.00		50.00	
TOTALS	$1,825.00		$1,800.00	

It should be noted that the General Fee is a charge which represents the total of the student health, publications, athletic, library, damage, Student Union, and other fee charges.

An initial, non-refundable registration fee of $20.00 is charged all new students. This fee as well as the required $50.00 deposit is paid upon acceptance into the University. One-half of the deposit serves as a continuing room deposit for succeeding semesters, and the other half serves as a continuing reservation deposit.

Since the undergraduate colleges are residential colleges, all students except day students living at home are required to live in the residence houses. The majority of the rooms on both cam-

puses are double rooms occupied by two students. A limited number of single occupancy rooms are available for students desiring such an arrangement.

Dining facilities for men include three cafeterias with multiple-choice menus, and the Oak Room, where full meals and *a la carte* items are served. In the Woman's College, resident undergraduate women board in dining halls at a fixed fee of $450.00 per academic year.

Financial Aid

Since the colleges are interested in students of ability and ambition who desire a complete college experience of known quality, the total charge should not be a deterrent to those students who are unable to defray the entire cost of their education. Assistance is made available to qualified students through awards, scholarships, loans, and grants. Extensive scholarship and loan funds provide help for about 30% of the entering class. Part-time employment in various divisions of the University often supplements this amount for the particularly needy student, or provides modest help for the student not on scholarship or loan funds. Nine hundred undergraduate students in 1959-60 received assistance totalling about $910,000.

Specific awards include the following:

Thirty-five Angier B. Duke Memorial Scholarships, with a value from $500 to $1,800. They are awarded to men and women on a basis of merit. Though granted for one year, they are renewable from year to year so long as the student does distinguished work in his studies.

Four hundred grants-in-aid, ranging from $200 to $1,000 per year, are awarded on a basis of merit and need.

A number of National Methodist Scholarships, valued at $500 per year, are available on a basis of demonstrated need to Methodist students who have given evidence of leadership in their local Methodist Youth Fellowship Groups.

Scholarships from industry, ranging in value from $200 to $2,000, are awarded to students with excellent academic records, and are renewable for each of the years of undergraduate study.

Eleven Duke University School of Nursing Scholarships,



The College of Engineering Building, showing the front and a partial view of one of its three wings.

valued at $500 to $1,000 per year for a maximum tenure of two years, are awarded to young women in the entering class of the School of Nursing.

Three scholarships, awarded on merit, are available to students in Junior Colleges who wish to enter one of the undergraduate colleges as a transfer student. Stipends range in value from $250 to $1,000 per year.

In addition to scholarships, other forms of financial assistance are open to undergraduates. These include remission of tuition for children of Methodist ministers of the North Carolina or Western North Carolina Conference of the Methodist Church, children of ministers of all faiths residing in Durham County, North Carolina, and children of designated faculty and staff of Duke University; special arrangements for pre-ministerial students; student loan funds, including those provided in the National Defense Education Act of 1958; and part-time jobs.

Details of all scholarships and other financial aids may be secured by addressing the Executive Secretary, University Scholarships Committee, 217 Allen Building, Duke University, Durham, North Carolina.

Residence Houses

On the Woman's Campus (or East Campus) ten residence houses accommodate a student-body of somewhat over 1,100 women. Each has a standard organization, consisting of a Counselor, who is a member of the Dean's staff and who lives in the house as an adult adviser, and the student House Government committee. The latter accepts responsibility in helping to provide an agreeable climate for successful dormitory life. To each house are assigned students from all four classes, about 30 places in each being reserved for freshman women.

Designed in Georgian style, the residence houses form a large part of the central quadrangle of the woman's campus. They are carefully arranged for modern dormitory living, with provision for parlors, small appointment rooms, laundry rooms, kitchenettes, and other amenities for pleasant living.

On the University (or West) Campus some 2,200 men are housed in four Quadrangles—Craven, Crowell, Few, and Kilgo, and in Wannamaker Hall. Kilgo and Crowell are reserved for members of the Freshman Class of Trinity College and the College of Engineering. All Freshman houses have housemaster and assistant housemasters in residence. Houses for upperclassmen are arranged to provide separate sections for fraternity groups and for non-fraternity men.

Upper—A roof-top view of some of the residence houses for men on West Campus.

Lower—One of the residence houses for women on East Campus.





The Course of Study

Undergraduates at Duke may pursue a course of study leading to one of the following degrees: Bachelor of Arts (A.B.), Bachelor of Science (B.S.), Bachelor of Science in Civil, Electrical, or Mechanical Engineering (B.S. in C.E., B.S. in E.E., B.S. in M.E.), and Bachelor of Science in Nursing.

The curriculum of the undergraduate colleges has undergone numerous changes in the course of years in order to meet the challenges of new conditions and to provide flexibility for a student body that changes in aptitudes and achievement over a long span of time. Yet the essential purposes and aims of the liberal arts college have remained the same: to offer a program, with breadth and depth in each subject-matter discipline, to enable a student to establish foundations upon which he can develop a sound philosophy of living and build a satisfying, productive career.

Many students entering college feel sure that they wish to prepare for certain professions and are eager to find "practical" courses that will point toward those professions or occupations, only to discover after a year that they have lost early interests in favor of others that appear more congenial to their aptitudes. Other students enter with only vague notions of a future career. A liberal arts course well serves all of these students, especially in the beginning years. Students entering the College of Engineering have already chosen their profession, of course, and are directly involved in professional training; yet so important in their future is the liberal arts curriculum deemed that a very considerable portion of their course is devoted to those subjects which are available to or required of the liberal arts students.

In order to achieve both breadth and depth in his program, the student is required to meet certain general graduation requirements before he chooses a special field of concentration. The freshman, for example, will take English 1-2, a foreign language, a laboratory natural science, mathematics (in most instances), history or religion, one elective course (which may be economics, political science, philosophy, history, and so on), and physical education. The engineer, however, takes a slightly modified,

standard course: engineering drawing, English, history, mathematics, physics, and physical education.

In the sophomore year the student continues his study of foreign language, and chooses those courses in the several departments that enable him to complete the general basic requirements for graduation. In addition to these he has available to him elective courses which serve to give him a broad distribution in the areas of the humanities, social sciences, and natural sciences. By the end of the sophomore year he is expected to declare his major field of concentration. The last two years of his college program are devoted to a deepening study in his field of concentration, along with related work that should be chosen so as to provide an integrated program of study.

The student of nursing likewise takes a modified program which includes English, history, political science or religion or an elective in music, art, or philosophy, zoology, chemistry, psychology, microbiology, nursing, and physical education.

The prescribed work in breadth during the first two years of study is designed to acquaint the student with those fields of thought which are relevant to him as individual and as citizen. The work in depth during the last two years is designed to offer him the opportunity to achieve a mastery of a limited subject and to lay a groundwork for his future career.

More detailed information about the curriculum and the courses of study in Trinity and the Woman's College may be obtained by writing the Registrar for a copy of the Bulletin of Undergraduate Instruction. For further information about the curriculum in engineering, please request the Bulletin of the College of Engineering. For further details of the courses in nursing, please request of the Dean of the School of Nursing a copy of the Bulletin of the School of Nursing.

Planning for the Future

Despite the difficulties of making a final decision regarding one's future occupation, most students will find it profitable to give careful early thought to the ever-expanding opportunities for careers. For entrance into post-graduate programs for professions, definite requirements must usually be met before gradua-



tion from college. These should be known soon enough so that a satisfactory program may be planned. The Bureau of Testing and Guidance is prepared to offer information about admissions tests to professional schools, definite details regarding particular opportunities, and counseling concerning steps to be taken in what becomes a more and more complex and bewildering procedure. Through the Bureau the student may also arrange for special tests to determine his own lines of interests or aptitudes. The Appointmens Office is always ready to offer information, advice, and practical aid in putting students in touch with employment opportunities, both for summers and for permanent post-college positions. Other offices have available complete information about scholarships, fellowships, and grants-in-aid for graduate and professional schools and for awards for foreign study, as well as for interim educational experiences in other colleges and universities.

Graduate Study in the Arts and Sciences. Students who may look forward to entering graduate school for work leading to advanced degrees should remember that most graduate schools will require a reading knowledge of at least two languages, usually French and German. In some schools other languages may be accepted in lieu of these. The student should inform himself of the requirements of the particular institution which he wishes to enter. Many schools insist upon the submission of scores on the Graduate Record Examination, and most expect high grade averages, particularly in the field of concentration.

Teaching. The program in the undergraduate colleges for those who wish to teach is designed to prepare both primary and secondary school teachers. While there are no specialized courses for this program in the Freshman year, it is well for all prospective teachers to consult appropriate members of the Department of Education for advice about the courses required in the ensuing years. Programs for elementary school teachers differ from those for secondary school teachers: and the certification requirements vary from state to state. Under these circumstances, early advice and counseling from those persons in Education who are well-informed will be well worth while.

Law. No prescribed course is set for the pre-legal student. He will want to choose his major fields of concentration, however, from those disciplines which offer him a broad general education in various fields of thought. Among these are political science,



Small, seminor-type closses give the undergroduote student an opportunity for close, personol contact with his instructor.

economics, history, philosophy, sociology, psychology, and English. It is essential that the prospective lawyer be highly skilled in the use of both spoken and written English. Training in public speaking and participation in debating activities will add much to his preparation for law.

Medicine and Dentistry. Students who look forward to courses in medicine or dentistry should seek early advice upon the necessary course of study for admission to the schools of their choice. All medical schools require basic courses in chemistry, physics, zoology, and mathematics. Although it should be emphasized that the pre-medical student need not major in science, the non-science major should make certain that he include in his program those advanced courses beyond the basic courses that his adviser deems essential. He will also find it advisable to take more than the minimum requirements in certain other basic courses.

Theology and Religious Education. Those students who intend to enter the ministry or to follow some other religious vocation should have a broad liberal arts background. Toward this end, they should include in their programs course work in English, literature, history, philosophy, psychology, sociology, as well as courses in religion. Recommended fields for concentration are English, history, philosophy, sociology, and religion.

Business. Students who plan to enter business or accounting have available specialized programs which require, in addition to the normal minimum requirements for graduation, certain specific courses in economics and in accounting to be taken in a required sequence. Mathematics, normally taken in the Freshman year, is a required course for both programs.

Academic-Professional Programs. Students who wish to combine the liberal arts work with a beginning year of professional school study in their senior year should investigate the academic-forestry and academic-law programs. The provision enabling a senior to elect the work of the first year in a professional school of the University applies solely to eligible students in Trinity College or the Woman's College. The privilege of completing the combined course of the degree is contingent upon admission to the professional school at the close of the student's junior year. A student thus admitted registers as a senior in his college and as a first-year student in the professional school.

The ROTC

Through Naval and Air Force Reserve Officers Training Corps programs the University is cooperating with the Department of Defense in the effort to provide a steady supply of well-educated officers for the active and reserve forces of the nation.

There are two basic programs in the Naval ROTC through which students can qualify for Naval commissions upon graduation: one, the Regular Naval Reserve Officers Training Corps program, provides a maximum of four years in the University largely at government expense, followed by a temporary commission in the regular Navy or Marine Corps; the other, the Contract program, leads to a commission in the Naval Reserve or the U. S. Marine Corps Reserve. Qualfied students may also

enroll in the Marine Corps Platoon Leaders Class, which has summer training leading to a reserve commission.

The Regular Student. Quotas are awarded on the basis of an annual nation-wide test and selection procedure. Students selected are appointed Midshipmen, USNR, and receive for a maximum of four years tuition, fees, and textbooks at government expense plus retainer pay at the rate of $600 per year. The regular midshipman may take any course leading to a baccalaureate or higher degree with certain exceptions, e.g., pre-medicine and medicine, pre-theological and theological, music and art.

The Contract Student. The contract student is selected from those regularly enrolled in Duke University who desire to qualify for a commission in the Naval or Marine Corps Reserve while pursuing their normal courses of study. There is no restriction on the course of study which a contract student may pursue; nor is he required to take college physics while in the program. He has the status of a civilian who has entered into a mutual contract with the Navy and is not eligible for the benefits and retainer pay received by regular midshipmen. He is paid a subsistence allowance during his last two years in the NROTC, however, amounting currently to 90 cents per day. He goes aboard ship for one summer training cruise, normally between his junior and senior years. Upon graduation, he is commissioned in the Naval or Marine Corps Reserve and, if needed, reports for two years' active duty.

Both Regular and Contract midshipmen are deferred from Selective Service by virtue of their commitment to serve on active duty after graduation. The Navy furnishes necessary uniforms and equipment.

THE AIR FORCE RESERVE OFFICERS TRAINING CORPS: The unit functions as a regular department of instruction known as the Department of Air Science. It selects and trains students who possess the requisite character, intelligence, desire, and sense of duty to become Air Force officers.

For enrollment in the Basic Course (freshman and sophomore years) the student must be a male citizen of the United States; be physically qualified under standards prescribed by the Air Force; be accepted by the institution as a regularly enrolled student and must meet other stated requirements.

For enrollment in the Advanced Course (junior and senior years) the student must have successfully completed the Basic





Left—A group of Air Force ROTC cadets board an air transport on on inspection tour of on oir bose.

Right—Novol RTOC midshipmen, on summer cruises, goin a working knowledge of ships of the line.

Course or have had at least one year of honorable service in the Armed Forces of the United States; must execute a written agreement with the government to complete the Advanced Course *and accept a commission in the United States Air Force Reserve,* contingent upon graduation, and must meet other requirements.

Since the primary need of the Air Force is for flying officers, most of the students selected for Advanced Air Science must be physically qualified for flying training after graduation. Those selected for the advanced course are furnished uniforms, texts, training equipment and are paid approximately $600 for the two years of the Advanced Course.



The club house and putting green of Duke Golf Course.

Student Life

Social life within the undergraduate colleges embraces so many kinds of student relationships that only a partial impression of it can be conveyed. Students of many diverse backgrounds and experiences offer both a great variety of individuality and at the same time a desire and need for community and identification. Some of this is met by common academic requirements and experiences, yet it is fair to say that most of it is gained through extra-academic affiliations. Properly, the earliest and in some respects the strongest is the class identification. In many ways the Freshman Class is the most cohesive of the four undergraduate classes, and it is during this first year that the beginning student finds his friends and associates for his college career and makes the social affiliations which will lead him into the campus life of the coming years.

Although the campuses for men and women are geographically separated, social life and college life are essentially co-educational. Each campus has its own student government association, its own inter-social councils, its own local and individual groups. All of these meet at many points for inter-college life. Women and men jointly serve on boards and councils that are concerned more with the social side of college life than with the strictly academic.

Fraternities and sororities offer to some students benefits of a social affiliation during the years of college, but offer little of interest to many others. There are nineteen national fraternities on the West Campus: Alpha Tau Omega, Beta Theta Pi, Delta Sigma Phi, Delta Tau Delta, Kappa Alpha, Kappa Sigma, Lambda Chi Alpha, Phi Delta Theta, Phi Kappa Psi, Phi Kappa Sigma, Pi Kappa Alpha, Pi Kappa Phi, Sigma Alpha Epsilon, Sigma Chi, Sigma Nu, Sigma Phi Epsilon, Tau Epsilon Phi, Theta Chi, and Zeta Beta Tau. All of these occupy sections in the dormitory quadrangles that include chapter and meeting rooms. No separate dining facilities are provided for fraternities; the members board in the University dining halls. About forty percent of the total men students join fraternities; and both fraternity and non-fraternity groups contain respected and prominent members of the student body. Deferred rushing has

been in effect for some years, and freshmen may not be asked to join fraternity groups until the beginning of the second semester of their first year. Rules governing the conduct of fraternity affairs are made by the Inter-fraternity Council and administered by the Judicial Board of that body.

In the Woman's College thirteen national sororities have established chapters on the campus: Alpha Chi Omega, Alpha Delta Pi, Alpha Phi, Alpha Epsilon Phi, Delta Delta Delta, Delta Gamma, Kappa Alpha Theta, Kappa Delta, Kappa Kappa Gamma, Phi Mu, Pi Beta Phi, Sigma Kappa, Zeta Tau Alpha. No separate dining facilities are available to sororities; members board along with all other students in the two dining halls on the campus. Sorority affairs are under the supervision of the Woman's Pan-Hellenic Council, which serves these organizations much as the Men's Inter-fraternity Council serves the fraternities.

In addition to the purely social fraternities, numerous national honorary societies have chapters on the campus. These include groups in economics, German, classics, education, psychology, social science, mathematics, engineering, political science, Spanish, physics, French, science, and in service, forensics, leadership, scholarship, and preministerial. There are also numerous local honorary orders for both men and women in scholarship, leadership, athletics, medicine, and engineering

Religious Life

The essential union of learning and religion is exemplified by the University's motto, "Eruditio et Religio." Many groups and organizations join to provide a broad and significant experience in the religious and moral life of the Colleges. The beautiful Gothic Chapel stands in the center of the West campus, an inspiring symbol of the place of religion in campus life.

The Chapel also encourages the students to translate their worship into effective Christian living. A rich program of activities is offered, so that every student can find something that will challenge his interests and meet his needs as an active member of his faith.

These activities are developed along three lines: interfaith, interdenominational, and denominational. Protestant, Jewish,

and Roman Catholic students are organized in their respective groups; but periodically they join together in interfaith programs which are carefully planned to respect the traditions of the various faiths. Interdenominational activities for all Protestant students are emphasized because it is believed that a more complete Christian faith is developed through sharing knowledge and fellowship with Christians of other churches.

In the University Service of Worship, conducted each Sunday morning, two hundred students participate by singing in the choir; at least one hundred other students aid in special ways as ushers, collectors, and assistants at services of Holy Communion. Many hundreds come to worship and are inspired by the beauty and the challenge of these services.

The University Religious Council, composed of students and faculty members, promotes this interdenominational religious life in its many phases. The work of the Council is under the supervision of the Chaplain to the University, who also is Director of Religious Life. He, together with the two Associate Directors of Religious Life, coordinate the work of the Council and the programs of the various denominational groups on campus.

Complementing the interdenominational program on campus, the denominational emphasis is designed to help each student become a better member of his own denomination. True churchmanship is promoted by the five full-time denominational chaplains and the eight part-time advisors.

Additional opportunities for student religious enrichment are offered in the organ and carillon recitals, choral concerts, pageants, and other special services held from time to time, and by world-famous preachers heard each month in the Duke Chapel.

The Dean of the Chapel, in his official position, seeks to interpret the place of religion in culture and society as it bears upon the academic life. Intramurally, he acts as a liaison officer among the colleges and the graduate and professional schools in religious matters pertaining to their interests. At the University service of worship, he preaches, officiates at the lectern, and celebrates the Sacraments. He serves extramurally as an ambassador-at-large representing the University nationally and internationally in ecumenical matters.

Separate in organization, yet coordinated in aims, are the YWCA and YMCA, both active organizations whose many members are concerned both with social work in the community and in varied programs integrated with campus needs. From the



A Sunday morning interdenominational worship service in Duke Chapel, where a 200-voice student choir participates weekly.

Freshman Advisory Council to help new students at their first arrival on campus to arrangements for Parent's Week-Ends, from sponsoring vesper services and meditations to organizing panel discussions on topics of contemporary interest and significance, the two groups make their influence felt throughout the colleges.

Music, Speech, and Dramatics

Students who have developed interests in music, either as performers or spectators, will find many opportunities to indulge their interests. Competent musicians can find artistic groups which they may join: the symphony orchestra, the chamber orchestra, the concert band, the brass ensemble, the marching band for men. All of these organizations are professionally directed, and most are devoted to the study and performance of serious music. For those who express themselves by singing more groups are available: The Chapel Choir, composed of two hundred men and women, the Woman's and the Men's Glee Clubs, which regularly give several concerts a year, and a smaller group of trained voices, the Madrigal Singers, which emphasizes research for and performance of unusual ensemble music. English and Italian Madrigals, French Chansons, and contemporary compositions are performed *a capella* in campus and city programs. A new group, The Chancel Singers, has been organized for a select group of sixty men and women for the performance of challenging music. Programs have included Bach, Brahms, Pergolesi, Gabrilli, and Franck. The varied musical programs offered by such strictly student groups are supplemented by the Chamber Arts Society, which brings to the campus the best chamber music ensembles from this country and abroad; by the Duke Artists' Series, which sponsors the appearance of symphony orchestras, chorale groups, individual artists, ballets; and by the Duke University Arts Council, which sponsors many free concerts and recitals and maintains rental libraries of classical records and framed art reproductions.

Students who take pleasure and satisfaction in speech and dramatics will find stimulating outlets for their talents. The Debate Council provides qualified students a chance to develop analytical and logical thinking in formal and informal discussions and debates. The varsity debate team has for many years established an excellent record in intercollegiate debating, both regionally and nationally. The presence on the campus of WDBS, a very active college radio station, provides experience in production, business management, engineering, and sales. The station broadcasts for more than eighteen hours a day and enlists a large audience on both campuses.

Creative dramatic experience is well supplied by the Duke Players and Hoof 'N' Horn. For many years the Players have put on distinguished productions of classical and modern plays. Using both arena style production in their own theatre, and proscenium style in the University auditorium, the organization presents three major plays every year, and a number of experimental plays and readings. Aspiring playwrights have a chance to see their own work produced. Indeed, all aspects of design, lighting, business management, writing, and acting are available to all undergraduates of the Colleges. Hoof 'N' Horn, a younger organization, directs its attention to an annual production, during the traditional "Joe College Week End," of a musical comedy. Student writers, composers, arrangers, directors, designers, dancers, singers, technicians cooperate to produce highly original and diverting shows.

Publications

On every college campus student publications provide a direct and valuable opportunity for student literary expression and become thereby an adjunct to the educational process. Both men and women undergraduates find exciting and stimulating experiences working on the numerous publications issued at Duke. All publications are under the supervision of a Board composed of representatives of students, faculty, and administration. The *Archive,* a literary magazine, publishes student creative writing in fiction, poetry, essays, reviews. Throughout a long life it has maintained a high quality of literary expression, and many of its student contributors have in their maturity justified their early literary promise. The *Chronicle,* the student newspaper—"The tower of campus thought and action"—has served for more than a half century as the forum of student opinion. Published three times a week, it is consistently rated high by national college press associations. The *Chanticleer,* the year-book, serves as a review of the school year, and records in text and pictures the individuals, organizations, events that have academically and socially contributed to the college experience. The *Peer,* a quarterly magazine, is devoted to collegiate life and interests and contains stories of general interest, essays, cartoons. Another quarterly, the



With the guidance of the Student Union staff, students prepore to promote one of the forthcoming events on the extracurricular colendor.

DukEngineer, appears under the auspices of the students in the College of Engineering. Semi-technical in nature, it provides articles by students on new developments in the profession, news of engineering societies and their activities, and local items of interest to engineers.

The Student Union

In addition to these, but not duplicating them, is the Student Union. Efficiently organized and directed, and maintained by student and University fees, it is dedicated to stimulate, promote, and develop the social, recreational, educational, and spiritual activities of all students. To fulfill its large purpose, the Student Union operates broad and expanding programs of many kinds. Since it is student-centered, it utilizes the talents and energy of several hundred undergraduates in effecting its programs. Housed in Flowers building, it maintains lounges, Hi-Fi record collections, game rooms, offices for student organizations. Through its many committees, the Union arranges art exhibitions, photographic displays and contests, promotes bridge clubs, arranges sings, dances, get-togethers. It sponsors major attractions, such as plays by professional groups, distinguished speakers, prominent musical and dance groups. And through its Educational Affairs Committee it promotes symposia on questions of general interest and importance which draw to the campus figures of national and international eminence.

Physical Education

Students of Trinity College and the College of Engineering are required to engage in some type of physical education for two years or four full semesters. This work consists of participation in natural, practical, physical activity for at least three one-hour periods each week. The purpose is to improve body control and strength to stimulate the development of mental and physical alertness, to establish habits of regular exercise, and to give training and experience in various kinds of recreational sports in which the student can participate in later life.

In addition to the required work in physical education, the student may choose, on a voluntary basis, to engage in the well-developed intramural program, which embraces a dozen sports and enlists the participation of a large percentage of the men stu-



Student Union sponsored symposia bring to the Duke compus distinguished experts for discussion of questions of broad contemporary importance.

dents in Trinity College and the College of Engineering. In a typical year more than 3,000 students on many fraternity, dormitory and organizational teams participate in tournaments to compete for more than fifty trophies. The program is deservedly popular because it enables every student to choose the sport he most enjoys and because students themselves serve as their own managers.

The program of the Health and Physical Education Department of the Woman's College is designed to give the students of that college an appreciation of the value of activity for general physical well-being, skill in one or more activities which can be enjoyed as recreation during and after college, a well-developed and well-coordinated body, and a knowledge of good posture and efficient handling of the body in everyday activities. To this end, students are allowed to choose from a large number of activities, including individual, dual and team sports, swimming, and several types of dancing. Each student during her two years of required physical education must elect one course in dance. Those students who are unable to pass the swimming test must take one

course in swimming before graduation. At the mid-point in the fall semester of the freshman year the activity course ends, and all freshmen take two periods a week of fundamental movement and one of social hygiene for the remainder of the semester.

The Dance Group, the Swimming Club, and the other sports clubs of the Woman's Recreation Association give opportunities for each student to take part in the types of intramural activities most interesting to her. The swimming pool, tennis courts, bowling alleys, and other athletic equipment are available to all students for use at specified times.

In order to maintain certain hygienic standards of physical education and intramural athletics, the University has made available for all students, in addition to facilities for physical activity and recreation, the following equipment and services:

1. (a) Men. A regulation uniform: shirt, trunks, supporter, socks, sweat clothes, and towel.
   (b) Women. Gym suit, dance leotard, bathing suit, warm-up suit.
2. Provision for locker and handling of uniform.
3. The laundering of uniform and towel as needed.

Intercollegiate Athletics

The intercollegiate athletic program is controlled entirely by the University through the Athletic Council composed of seven members from the faculty, administration, and alumni groups. Representative freshman and varsity teams are trained in football, basketball, baseball, track, cross country, golf, soccer, lacrosse, swimming, tennis, and wrestling. Schedules are arranged to include both the schools in the Atlantic Coast Conference, of which the University is a member, and others in the South, North, East, and Middle West. Football and basketball are always the most popular spectator sports. The less popular sports, however, have their devoted followers, and over the years many excellent teams have represented the school, and athletes of note have been developed.



"Firm stands our line of blue."

General Information

Course loads. The normal program for the student in Trinity College and the Woman's College is four or five academic courses, totalling 14 to 17 hours, per semester. In the College of Engineering the normal program is 17 to 19 hours per semester.

Grading System and Quality Credit. Grades in course are recorded as A, B, C, D, F. Quality points are assigned to each grade: four quality points for A, three for B, two for C, one for D, for each semester hour. Thus an A grade in a three-semester hour course would earn twelve quality points. At least 248 quality points are required for the Bachelor of Arts or Bachelor of Science degree; and 296 quality points for a degree in Engineering.

Class attendance. Regular and punctual attendance in class work is expected as part of the student's obligation to himself and to the school. The student, however, is permitted to take one unexcused absence for each semester hour of course work. Absences caused by illness and so certified by a medical official are, of course, excused.

Conduct. Students are expected to cooperate in maintaining high standards of conduct. The University reserves the right, and matriculation by the student is a concession of this right, to ask the withdrawal of any student whose conduct is not satisfactory to the University. Although direct supervision is entrusted to the Dean of Women and the Dean of Men, the respective men's and women's government associations exercise authority to investigate cases of misconduct and to make recommendations of penalties based on their findings.

Automobiles. Freshman are not permitted to own or operate motor vehicles at the University. Upperclassmen in Trinity and the College of Engineering are allowed to operate cars, provided they are registered and operated in accordance with University regulations. Under these conditions, seniors in the Woman's College may also operate cars.

Student Health

The Student Health Program is closely related to the Teaching Hospital of the Duke University Medical Center. This arrangement provides an unusually comprehensive service, available at all times. The cost, for regularly enrolled students, is included in the general fee paid each semester, and in the fees charged each student in the summer quarter.

The service is under the direction of the University Physician with the cooperation of the Staff. It includes hospitalization in Duke Hospital, as deemed necessary by the Hospital Staff, but limited to thirty days; medical and surgical care under the supervision of a senior physician or surgeon; drugs, X-ray work, and ward nursing. Special nursing is not covered. Students pay for board while in the hospital. Refraction of eyes, treatment of teeth and of all chronic and pre-existing conditions, such as diseased tonsils, hernias, pilonidal cysts and other elective surgery, chronic skin conditions, endocrine disturbances, etc. are not included. The cost of any necessary braces and orthopaedic appliances, as well as of special nursing, must be borne by the students, and blood used for transfusions must be paid for or replaced.

If students have insurance providing hospitalization, surgical, or medical benefits, the benefits shall be applied to the cost of their medical care. Accidents or illnesses occurring during vacations or while off the campus, are not included in this service. A special commercial policy available only to regularly enrolled Duke students furnishes complementary protection, if desired.

Advisory consultation with a psychiatrist at no expense is available to students through referral either by the Student Health Physicians or by the Deans, but office visits for psychotherapeutic interviews cannot be included in this service.

A woman physician is in charge and a nurse in constant attendance at the Woman's College Infirmary. Women students receive ambulant care at regular office hours and patients in this Infirmary can be transferred to the Duke Hospital at any hour of the day or night. Male students receive ambulant care at the Student Health Office in the hospital during regular office hours.



Libraries an bath East and West Campuses affer a quiet and intellectually stimulating atmasphere for undergraduate students to pursue individual research projects.

The emergency service and the specialist consulting services of the Hospital and Medical School are always available.

Students are given a careful physical examination upon arrival at the University. Every applicant should be re-vaccinated against smallpox within three years before admission to the University. It is urgently advised that the standard Salk vaccine routine for poliomyelitis be completed by all students and that all male undergraduates be actively immunized to tetanus by injections of toxoid.

Simple directions for procedure in reporting the student's need for medical care are contained in the Student Handbook supplied to each student upon entering.

Courses

The following list of courses open to students in the undergraduate colleges is suggestive, rather than comprehensive. Courses which are chiefly for graduate students but which enroll seniors in the colleges are not included.

Courses numbered 1-49 are normally for Freshmen; those from 50-99, for sophomores; those from 100-199, for juniors and seniors.

Hyphenated numbers designate full-year courses; numbers separated by commas designate courses that may be taken either semester.

Aesthetics, Art, and Music:

Art

1-2 Introduction to Art History
1L-2L Design Laboratory
51-52 Introduction to Art History
51L-52L Design Laboratory
53-54 Beginning Studio
55,56 Painting
131 Art and Archaeology of the Hellenic World
132 Roman Art and Archaeology
133 Medieval Architecture
134 Medieval Painting and Sculpture
135 Renaissance Architecture
136 Northern Renaissance Art
137 Italian Renaissance Painting and Sculpture
138 European Architecture 1550-1750
139 The Rise of Contemporary Architecture
140 Seventeenth and Eighteenth Century Art
141 American Art
142 Modern Painting and Sculpture
143 The History of Prints and Drawings
157,158 Advanced Painting
159,160 Printmaking

Music

1-2 Introduction to Music
11-12 Theory I
51-52 Introduction to Music
57-58 Vocal Diction
61-62 Theory I
73-74 Theory II
106 Piano Methods and Materials
107 Vocal Pedagogy
117-118 Theory III
121 Conducting
122 Orchestration
133 Orchestral Literature
134 Choral Literature
135 Piano Literature
136 Solo Song Literature
137 Chamber Music
138 Contemporary Music
147-148 History of Music
151 Public School Music Education
164 Music in the Nineteenth Century
165 Opera Literature
195-196 Collegium Musicum
— — Applied Music, Instrumental and Voice

Air Science:

1-2 First Year Basic Air Science
51-52 Second Year Basic Air Science
101-102 First Year Advanced Air Science
201-202 Second Year Advanced Air Science

Botany:

1 General Botany
2 General Botany
51 Culture and Propagation of Plants
52 Plant Identification
52 Ecology of Economic Plants
55 Structure of Vascular Plants
101 Principles of Heredity
103 General Bacteriology
104 The Structure and Identification of Lower Plants

151 Introductory Plant Physiology
156 Plant Ecology

Chemistry:

1,2 General Inorganic Chemistry
42 Introduction to Chemical Analysis
61 Fundamentals of Analytical Chemistry
65 Inorganic Chemistry
70 Quantitative Analysis
131 Advanced Quantitative Analysis
151,152 Organic Chemistry

Drama: (See English)

Economics and Business Administration:

11 Economic Geography
51-52 Principles of Economics
57-58 Principles of Accounting
60 General Accounting
103 Transportation
105 Industrial Management
109 The Economic Geography of Latin America
115 Fundamentals of Geography
120 Economic Geography of the Pacific
132 The Economic History of the United States
138 Business Statistics
143 Corporation Finance
144 Investments
147 Accounting for Control
149 Intermediate Economics
150 Economic Thought Since Adam Smith
152 Global Geography
153 Money, Credit and Banking
155 Labor Problems
158 Insurance
161 European Economic Problems
168 Marketing
169 Economics of Consumption
171-172 Advanced Accounting
173-174 Auditing, Theory and Practice
175-176 C.P.A. Review
177 Income Tax Accounting
178 Accounting Systems
180 Government Accounting
181 Business Law
182 Business Law
184 Commercial Law for Accountants
186 Latin American Economics
187 Public Finance
188 Personnel Management
189 Business and Government
191 Business Policy
193 Economic Systems
194 Economic Functions of the State

Education:

1 Orientation in Study and Study Habits
5 Developmental Reading
54 History of American Education
68 Mental Hygiene
101-102 Elementary Education: Principles and Practice
103 Organization and Management of the School
104 History of Education in European Culture
118 Educational Psychology
142 Children's Literature
161 Integrated Art in the Public School
162 Plastic Art in the Public School
164 Vocal Music in the Public School
166 Instrumental Music in the Public School

English:

1-2 English Composition
33 Writing Laboratory
53 English Composition
55,56 Representative Writers
65-66 English Composition
E93 Written and Oral Communication for Engineers
101 Expository English Composition
103-104 English Composition
111,112 Eighteenth-Century Literature
117 Milton
118 Persuasive Speaking
119 History of the Theatre
121 Stagecraft
122 Play Production
123,123 Shakespeare
125,126 English Literature, 1789-1832
129 English Novel
131,132 English Literature, 1832-1900
133,134 Contemporary Poetry
137,138 American Literature
139 The Speaking Voice

141 Chaucer
143,144 English Literature: Elizabethan and Early Seventeenth Century
147 The Literary Expression of Scientific Thought
150 Oral Interpretation of Literature
151 Essentials of Public Speaking
152 Argumentation
153,154 Comparative Literature
155 Modern European Drama
156 Modern British and American Drama
158 Contemporary Fiction
165 American Fiction
166 American Fiction
171,172 Radio Broadcasting
197-198 Senior Seminar in English

Forestry:

52 Principles of Forestry

Geology:

51 General Geology
52 General Geology
55 Structure Geology
58 Geomorphology
101-102 Mineralogy
151 Economic Geology
152 Introductory Paleontology
164 Introduction to Geologic Mapping

German:

1-2 Elementary German
63-64 Intermediate German
91-92 Introduction to German Literature
107,108 Scientific German
109,110 German Prose Fiction
115,116 German Drama of the Nineteenth Century
117,118 German Conversation
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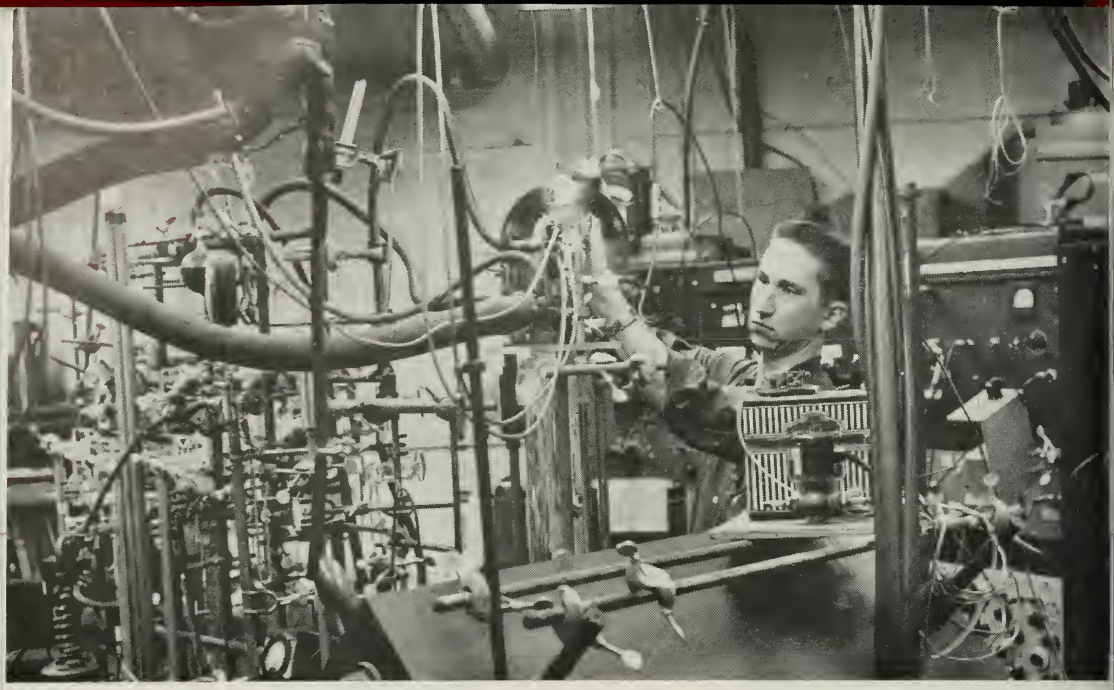
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BULLETIN
OF
DUKE UNIVERSITY

Undergraduate Instruction

(Trinity College, the Woman's College, and the College of Engineering)

ANNOUNCEMENTS FOR 1960-61

VOLUME 32 March, 1960 NUMBER 5-A

Annual Bulletins

For Bulletin of Information for Prospective Students, apply to *The Registrar,* Duke University, Durham, N. C.

For Bulletin of Undergraduate Instruction, apply to *The Registrar,* Duke University, Durham, N. C.

For Bulletin of the College of Engineering, apply to *The Registrar,* Duke University, Durham, N. C.

For Bulletin of The Graduate School of Arts and Sciences, apply to *The Dean of the Graduate School,* Duke University, Durham, N. C.

For Bulletin of The School of Forestry, apply to *The Dean of the School of Forestry,* Duke University, Durham, N. C.

For Bulletin of The School of Law, apply to *The Dean of the School of Law,* Duke University, Durham, N. C.

For Bulletin of The School of Medicine, apply to *The Dean of the School of Medicine,* Duke University, Durham, N. C.

For Bulletin of The School of Nursing, apply to *The Dean of the School of Nursing,* Duke University, Durham, N. C.

For Bulletin of The Divinity School, apply to *The Dean of the Divinity School,* Duke University, Durham, N. C.

For Bulletin of The Summer Session, apply to *The Director of the Summer Session,* Duke University, Durham, N. C.

For General Bulletin of Duke University, apply to *The Registrar,* Duke University, Durham, N. C.

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BULLETIN

OF

DUKE UNIVERSITY

THE UNDERGRADUATE COLLEGES

TRINITY COLLEGE
THE WOMAN'S COLLEGE
THE COLLEGE OF ENGINEERING

1959-60

ANNOUNCEMENTS FOR 1960-61

DURHAM, NORTH CAROLINA
1960

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Vice President in the Division of Education

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Vice President in the Division of Public Relations

Herbert James Herring, M.A., LL.D.
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Dean of the College of Engineering

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University Registrar

Benjamin E. Powell, Ph.D.
Librarian

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Calendar of the Colleges

1960

September	15.	Thursday, 7:30 p.m. Orientation begins: Assemblies for all new students entering Trinity College, the Woman's College, and the College of Engineering.
September	19.	Monday. Registration and matriculation of all students of Trinity College, the Woman's College, and the College of Engineering, who have not pre-registered.
September	21.	Wednesday. Final registration of pre-registered students.
September	22.	Thursday. Fall semester classes begin.
October	25.	Tuesday. Examination in English Usage.
November	5.	Saturday. Last day for reporting mid-semester grades.
November	23.	Wednesday, 12:30 p.m. Thanksgiving recess begins.
November	28.	Monday, 8:00 a.m. Classes are resumed.
December	11.	Sunday. Founders' Day.
December	17.	Saturday, 12:30 p.m. Christmas recess begins.

1961

January	3.	Tuesday, 8:00 a.m. Classes are resumed.
January	14.	Saturday, 12:30 p.m. Fall semester classes end.
January	17.	Tuesday. Final examinations begin.
January	27.	Friday. Final examinations end.
January	31.	Tuesday. Registration and matriculation of new students.
February	1.	Wednesday. Last day for matriculation for the spring semester.
February	2.	Thursday. Spring semester classes begin.
March	15.	Wednesday. Last day for reporting mid-semester grades.
March	25.	Saturday, 12:30 p.m. Spring recess begins.
April	4.	Tuesday, 8:00 a.m. Classes are resumed.
May	18.	Thursday, 5:00 p.m. Spring semester classes end.
May	20.	Saturday. Final examinations begin.
May	31.	Wednesday. Final examinations end.
June	3.	Saturday. Commencement begins.
June	4.	Sunday. Commencement Sermon.
June	5.	Monday. Graduating Exercises.

Student Life and Services

The Libraries

TO SUPPORT a rich educational experience in a world of rapid and far-reaching change, great library collections are essential Undergraduate students at Duke are fortunate to have available exceptional resources. The University library, among the first fifteen university libraries in the country, contains 1,390,540 volumes and 2,722,087 manuscripts. About 50,000 volumes are added annually. Separate departmental and professional school libraries provide notable collections in the several disciplines.

The Woman's College library, with its own attractive Georgian building, contains 121,220 volumes in an open stack collection, chiefly those books most constantly in use in the undergraduate curricula. But the larger collections of the main and specialized libraries are at hand when needed.

More detailed information may be obtained in a "Student's Guide to the General Library," available on request to the Librarian of the University.

Residence Halls

Since the undergraduate colleges of the University are resident institutions, all students are required to live in the residence halls. On the West Campus, Craven, Crowell, Few, and Kilgo Quadrangles, and Wannamaker Hall are occupied by undergraduate men. The quadrangles contain numerous houses which provide rooms for double and single occupancy. Kilgo and Crowell are reserved for members of the freshman classes of Trinity College and the College of Engineering. All freshman residence houses have a Housemaster and an assistant Housemaster residing in them.

On the Woman's Campus, the ten residence houses are alike in organization: each has a Counselor, a member of the Dean's staff, who lives in the house and serves as adviser; each house provides space for full representation from all four classes, approximately thirty places in each being reserved for freshmen. Nine of the houses—Alspaugh, Southgate, Bassett, Brown, Giles, Pegram, Aycock, Gilbert, and Addoms—have both single and double rooms; Jarvis has only double rooms.

Detailed information with regard to the student's obligations under the housing contract is sent by the Housing Bureau to each student upon his admission to the college.

Medical Care

The Student Health Program is closely related to the Teaching Hospital of the Duke University Medical Center. This arrangement provides an unusually comprehensive service, available at all times. The cost, for regularly enrolled students, is included in the general fee paid each semester, and in the fees charged each student in the summer quarter.

The Service is under the direction of the University Physician with the cooperation of the Staff. It includes hospitalization in Duke Hospital, as deemed necessary by the Hospital Staff, but limited to thirty days; medical and surgical care under the supervision of a senior physician or surgeon; drugs, X-ray work, and ward nursing. Special nursing is not covered. Students pay for board while in the hospital. Refraction of eyes, treatment of teeth and of all chronic and pre-existing conditions, such as diseased tonsils, hernias, pilonidal cysts and other elective urgery, chronic skin conditions, endocrine disturbances, etc. are not included. The cost of any necessary braces and orthopaedic appliances, as well as of special nursing, must be borne by the students, and blood used for transfusions must be paid for or replaced.

If students have insurance providing hospitalization, surgical, or medical benefits, the benefits shall be applied to the cost of their medical care. Accidents or illnesses occurring during vacations or while off the campus, are not included in this service. A special commercial policy available only to regularly enrolled Duke students furnishes complementary protection, if desired.

Advisory consultation with a psychiatrist at no expense is available to students through referral either by the Student Health Physicians or by the Deans, but office visits for psychotherapeutic interviews cannot be included in this service.

A woman physician is in charge and a nurse in constant attendance at the Woman's College Infirmary. Women students receive ambulant care at regular office hours and patients in this Infirmary can be transferred to the Duke Hospital at any hour of the day or night. Male students receive ambulant care at the Student Health Office in the hospital during regular office hours. The emergency service and the specialist consulting services of the Hospital and Medical School are always available.

Students are given a careful physical examination upon arrival at the University. Every applicant should be re-vaccinated against smallpox within three years before admission to the University. It is urgently advised that the standard Salk vaccine routine for poliomyelitis be completed by all students and that all male undergraduates be actively immunized to tetanus by injections of toxoid.

Simple directions for procedure in reporting the student's need for medical care are contained in the Student Handbook supplied to each student upon entering.

Special Services

Other services of many kinds are available to all undergraduate students. Among these may be cited the Bureau of Testing and Guidance, which provides a centralized program of educational, personal, and vocational counseling, and the Appointments Office, which assists undergraduates in their search both for summer employment and for post-graduation careers.

Physical Education

Students of Trinity College and the College of Engineering who have no inhibitory physical handicap must register for and enroll in a physical education class each of four semesters. The first two of these four consist of prescribed activities designed to improve body control and growth and development through big muscle exercise; the last two semesters may be devoted to activity of the individual's choice from a number of sports generally of a recreational nature such as badminton, basketball, golf, handball, swimming, tennis, and volleyball. A total of four semester hours credit toward graduation and quality points according to the marks assigned are awarded for these activities. In instances where the University Health Service examination indicates specific types of activity may be beneficial, a modified program is available as medically prescribed. Normal credit is awarded for participation in the modified program.

In addition to the four semesters of required physical education, each student may voluntarily participate in the intramural program, which embraces a dozen sports and attracts a large percentage of the student body. In a typical year more than 3,000 students forming fraternity, dormitory, and organizational teams, participate in seventeen tournaments and compete for more than fifty trophies. An ideal sequence of events would visualize each student learning physical skills in the required physical education program, practicing these skills in the intramural program, and applying them as a squad member in the intercollegiate sports program.

For each semester of undergraduate matriculation, the individual student is issued a uniform appropriate for the season and the activity in which he is engaging. The uniform is issued, exchanged, laundered, and maintained at no additional expense to the student.

The program of the Physical Education Department of the Woman's College is designed to give the students of that college an appreciation of the value of activity for general physical well-being, skill in one or more activities which can be enjoyed as recreation during and after college, a well-developed and well-coordinated body, and a knowledge of good posture and efficient handling of the body in everyday activities. To this end, students are allowed to choose from a large number of activities, including individual, dual and team sports, swimming, and several types of dancing. Each student during her two years of required physical education must elect one course in dance. Those students who are unable to pass the swimming test must take one course in swimming before graduation. At the mid-point in the fall semester of the freshman year the activity course ends, and all freshmen take two periods a week of fundamental movement and one of social hygiene for the remainder of the semester.

The Dance Group, the Swimming Club, and the other sports clubs of the Woman's Recreation Association give opportunities for each student to take part in the types of intramural activities most interesting to her. The swimming pool, tennis courts, bowling alleys, and other athletic equipment are available to all students for use at specified times.

In order to maintain certain hygienic standards of physical education and intramural athletics, the University has made available for all students, in addition to facilities for physical activity and recreation, the following equipment and services:

1. Gym suit, dance leotard, bathing suit, warm-up suit.
2. Provision for locker and handling of uniform.
3. The laundering of uniform and towel as needed.

THE INTERCOLLEGIATE ATHLETIC PROGRAM

The program, controlled entirely by the University, consists of the organization and training of representative freshman and varsity teams in football, baseball, basketball, track, cross country, golf, lacrosse, soccer, swimming, tennis, and wrestling.

The program is under the supervision of the Athletic Council, composed of seven members. Three of the seven are appointed from the faculty as follows: one member from the Officers of General Administration, one from the Officers of Educational Administration, division of the Colleges, and one from the Officers of Instruction of the undergraduate colleges. From this group the President of the University appoints the faculty chairman, who serves as chairman of the Athletic Council and of its executive committee.

Four of the seven members are selected from the alumni. One of the four, a University Trustee, an alumnus, and a member of the Board's standing Committee on Physical Education and Athletics, is appointed not less frequently than every three years by the chairman of the Board of Trustees. The remaining three, who may not succeed themselves, are elected annually by the general Alumni Association for terms of three years. The Director of Alumni Affairs serves *ex officio* as secretary of the Council and of the executive committee.

The three faculty members of the Athletic Council constitute a committee which alone has the responsibility of enforcing the scholarship and athletic requirements of the University for participation in intercollegiate sports. The athletic eligibility rules are those of the Atlantic Coast Conference.

The executive committee of the Athletic Council is composed of the faculty chairman of the Council, one other faculty member of the Council and one alumni member of the Council. The executive committee of the Council recommends to the President of the University persons to serve as Director of Athletics and as coaches in the various sports. The election of such persons, however, rests solely with the Board of Trustees of the University or with its Executive Committee on recommendation of the President of the University. The executive committee of the Council recommends to the Athletic Council athletic schedules and the award of insignia of merit earned by members of the athletic teams. However, decisions with respect to the same rest solely with the Athletic Council subject to approval of the President.

Each of the four undergraduate classes selects annually, for terms of one year, a member of each respective class to serve in an advisory capacity to the Athletic Council upon call of the faculty chairman on the matter of awarding insignia of merit.

All funds arising from athletics are handled entirely by the Treasurer of the University. An audit of the receipts and disbursements of these funds is made annually by the official auditors of the University and a report thereof made annually to the Executive Committee of the Board of Trustees.

Social and Cultural Organizations

The Duke Student Union has as its stated purpose, "to stimulate, promote, and develop the social, recreational, cultural, educational and spiritual activities of the students of Duke University." This purpose is carried out through a broad program of social and cultural recreation adapted to the leisure time interests and needs of all undergraduate students, who are members of the organization. The Union Building, located on the West Campus, is the student center. In one section the alumni offices, dining facilities, University Store, grill,

soda fountain, post office, barber shop, bank, and ball room are housed. In the other there are student organization offices; meeting rooms; information center; music, television, reading, and Town Boys' Lounge; and a recreational area. Similar service and activities areas for the Woman's College are provided on that campus.

The more than one hundred separate student organizations in the colleges fall primarily into seven broad areas. They are service, professional and honorary, communications, musical, dramatic, religious, and general interest. In the service group are found such activities as the Campus Chest, Student Government, Pan-Hellenic and Interfraternity Councils, the Student Union, and YMCA-YWCA groups. The Professional and Honorary organizations are numerous and include traditional Greek letter societies, such as Phi Beta Kappa, as well as national and local academic and leadership groups. The *Duke Chronicle,* the campus newspaper, is published three times each week, and the student radio station, WDBS, operates daily. Three magazines are published by students, as is a comprehensive yearbook. Student publications are under the control of the Publications Board, composed of six members from the University staff appointed by the President; six men from the junior and senior classes, elected by the students in Trinity College and the College of Engineering; four women from the junior and senior class, elected by the students in the Woman's College; and one from the junior and senior classes, elected by the students in the School of Nursing; and four editors and four managers of student publications, *ex officio* members without voting power. No student publication can be established at the University without the approval of the Board. The musical groups are strong. Included are the Chapel Choir, Symphony Orchestra, Concert Band, Glee Clubs, and several other smaller groups. The Duke Players, an inter-campus drama group, presents a number of plays and readings each season. The Hoof 'n' Horn group annually produces a musical comedy which is written, cast, directed, and acted by students from the three colleges.

Other campus groups are strictly social in nature. These organizations sponsor dances, chaperoned cabin parties, concerts, and informal discussion groups. Social functions are frequent enough to afford the relaxation needed from work required in classroom and laboratory.

Approximately half of the undergraduate students belong to fraternities or sororities. There are no chapter houses, but the program of fraternity and sorority activity is carried on within the sections of the regular dormitories or buildings set aside for this purpose. Nineteen national social fraternities and thirteen national sororities have chapters on the campus.

Religious Life

"Eruditio et Religio," the motto emblazoned on the seal of the University, proclaims belief in the essential union of knowledge and religion in the educational process. The Gothic Chapel stands at the center of the campus, an inspiring symbol of the place of religion in the well-balanced life. The Chapel encourages the cultivation of the spiritual and moral life of students through their participation in a program of varied activities.

The Dean of the Chapel, in his official position, seeks to interpret the place of religion in culture and society as it bears upon the academic life. Intramurally, he acts as a liaison officer among the colleges and the graduate and professional schools in religious matters pertaining to their interests. At the University Service of Worship, he preaches, officiates at the lectern, and celebrates the Sacraments. He serves, extramurally, as an ambassador-at-large representing the University, nationally and internationally in ecumenical matters.

In the Service of Worship on Sunday morning two hundred students participate by singing in the choir; at least one hundred other students aid in special ways, as ushers, collectors, and assistants at communion services.

The Chapel also encourages the students to translate their worship into effective Christian living. A rich program of activities is offered to challenge their interests and meet their needs. These activities are developed along three lines: interfaith, interdenominational, and denominational. Protestant, Jewish, and Roman Catholic students are organized in their respective groups with their denominational chaplains and their advisers.

The University Religious Council under the supervision of the Chaplain to the University, who is also Director of Religious Life, and his associates, coordinate the work of the Council and the denominational groups to promote a vital, religious experience.

Special organ and carillon recitals and other musical services are given from time to time in the Chapel.

Reserve Officers Training Corps

Through the Naval and Air Force Reserve Officers Training program the University is cooperating with the Department of Defense in the effort to provide a steady supply of well-educated officers for the active and reserve forces of the Nation.

THE NAVAL ROTC: There are two basic programs through which students can qualify for Naval commissions upon graduation: one, the Regular Naval Reserve Officers Training Corps program, provides a maximum of four years in the University largely at govern-

ment expense, followed by a temporary commission in the regular Navy or Marine Corps; the other, the Contract program, leads to a commission in the Naval Reserve or the U. S. Marine Corps Reserve.

The Regular Student—Quotas are awarded on the basis of an annual nation-wide test and selection procedure. Students selected are appointed Midshipmen, USNR, and receive for a maximum of four years tuition, fees, and textbooks at government expense plus retainer pay at the rate of $600 per year. The regular midshipman may take any course leading to a baccalaureate or higher degree with certain exceptions, e.g., pre-medicine and medicine, pre-theological and theological, music and art. His academic program must include 21 semester hours of Naval Science, 3 semester hours of General Psychology, one year of college physics and one year of college mathematics. For Engineering students, the Naval Science requirement is reduced to 18 semester hours since Naval Engineering (NS301-3 s.h.) is waived in the case of those students who are awarded Engineering Degrees upon graduation. The Regular goes on two summer training cruises aboard ship and receives aviation and amphibious indoctrination at naval shore stations the third summer. Upon graduation he must accept a commission as Ensign, USN, or Second Lieutenant, USMC, if offered, after which he serves on active duty with the fleet for four years, if required by the Secretary of the Navy. Toward the end of the required active duty, he may request retention in the regular Navy or Marine Corps, or at his option be commissioned in the Reserve. Officers commissioned in the Reserve under such an option may be released to inactive duty except in times of national emergency.

The Contract Student—The contract student is selected from those regularly enrolled in Duke University who desire to qualify for a commission in the Naval or Marine Corps Reserve while pursuing their normal courses of study. There is no restriction on the course of study which a contract student may pursue; nor is he required to take college physics while in the program. He must include in his academic program mathematics through trigonometry (if not successfully completed in secondary school), or one semester of college mathematics, 3 semester hours of General Psychology, and 21 semester hours of Naval Science. Similar to that of the Regular student, the Naval Science requirement is reduced to 18 semester hours for Engineering students, since Naval Engineering (NS 301-3 s.h.) is waived in the case of those students who are awarded Engineering Degrees upon graduation. He has the status of a civilian who has entered into a mutual contract with the Navy and is not eligible for the benefits and retainer pay received by regular midshipmen. He is paid a subsistence allowance during his last two years in the NROTC,

however, amounting currently to 90 cents per day. He goes aboard ship for one summer training cruise, normally between his junior and senior years. Upon graduation, he is commissioned in the Naval or Marine Corps Reserve and, if needed, reports for two years' active duty. Upon completion of the minimum active service requirements he may request transfer to the regular component of the Navy or Marine Corps, retention on active duty as a reservist, or transfer to the inactive reserve for a period of four years.

Both Regular and Contract midshipmen are deferred from Selective Service by virtue of their commitment to serve on active duty after graduation. The Navy furnishes necessary uniforms and equipment. Uniforms are worn only on drill days or other special occasions when prescribed by the Professor of Naval Science. Regular and Contract students receive the same instruction and wear the same uniforms. No distinction is made between the two, except in the handling of their records.

THE AIR FORCE RESERVE OFFICERS TRAINING CORPS: The unit functions as a regular department of instruction known as the Department of Air Science. It selects and trains students who possess the requisite character, intelligence, desire, and sense of duty to become Air Force officers.

For enrollment in the Basic Course (freshman and sophomore years) the student must: be a male citizen of the United States; be physically qualified under standards prescribed by the Air Force (due allowance will be made for defects which are correctible prior to the student's eligibility for appointment as a commissioned officer); be accepted by the institution as a regularly enrolled student; be not less than 14 years of age and not have reached 23 years of age at the time of enrollment; must successfully complete such general survey and screening tests as may be prescribed; and must sign a loyalty certificate with the U. S. Government. Students initially entering the University who have had previous preparatory or high school military training are normally accepted in Basic Air Science at the same academic level as that in which they are accepted by the University.

For enrollment in the Advanced Course (junior and senior years) the student must have successfully completed the Basic Course or have had at least one year of honorable service in the Armed Forces of the United States; must execute a written agreement with the government to complete the Advanced Course *and accept a commission in the United States Air Force Reserve,* contingent upon remaining in school, and to attend Advanced Summer Training at the time specified; must agree to take orientation flights when offered; must be less than 28 years of age at the time of graduation; must successfully complete

such general survey and screening tests as may be prescribed and must be selected by the Professor of Air Science and the appropriate authority of the University.

Students in the Basic Course may be deferred from Selective Service upon satisfactory completion of one semester of Basic Air Science. Advanced students are eligible for deferment as soon as they are enrolled formally in the Advanced Course. Selection for deferment is made by a board composed of representatives from the AFROTC and the University.

Plans are formulated for a Flight Instruction Program using light aircraft. This flying training program is restricted to those senior cadets who desire to participate and who are physically and aptitudinally qualified for the Air Force Pilot Training Program. The seniors who satisfactorily complete the Flight Instruction Program will qualify for a civilian Private Pilot's License.

All uniforms, texts, and training equipment required for the Air Science Course are furnished at government expense, and students are paid a total of approximately $600.00 for the two years of the Advanced Course.

Since the primary need of the Air Force is for flying officers, the majority of students selected for Advanced Air Science must be physically qualified and desirous of applying for flying training after graduation. Upon graduation and completion of the Advanced Course, selected students will be offered commissions as Second Lieutenants in the Air Force Reserve. Reserve Officers who desire lifetime careers in the Regular Air Force may apply for regular commissions after serving on active duty for one year. An Air Science IV student who maintains an academic average in the upper third of all seniors in his major is eligible for designation as a Distinguished AFROTC Cadet and later, a Distinguished AFROTC Graduate. A designee, if fully qualified, will receive a regular commission upon graduation.

The Summer Session

THE SUMMER SESSION at Duke University makes available to Duke undergraduate students and to undergraduates from other universities and colleges a notable program of instruction in many fields of knowledge both academic and professional.

Undergraduates in Duke University who desire to accelerate their programs may complete the work for a degree in three years by attending two and one-half summer sessions.

Undergraduates from other colleges and universities may enjoy the special advantages of summer instruction at Duke and transfer their earned credits to their own institutions.

The Summer Session of 1960, will include two terms: Term I, June 10 to July 15; Term II, July 16 to August 20. By attending both terms it is possible for a student to earn as many as twelve semester hours of credit.

Instruction of interest to undergraduates will be offered in the summer of 1960 in the following departments and colleges: Botany; Chemistry; Economics; Education; Nursing; Engineering; English; Forestry; French; Geology; German; Greek; Health and Physical Education; History; Latin and Roman Studies; Mathematics; Philosophy; Physics; Political Science; Psychology; Religion; Sociology; Spanish; and Zoology.

Distinctive features of Summer Session instruction are provided by the program in marine biology offered at the Duke Marine Laboratory, Beaufort, North Carolina, and by various conferences in several of the Departments.

While the basic purpose of the Summer Session is to serve the academic and the professional requirements of those who are interested in their own educational advancement, the University recognizes the need of, and provides for, a varied recreation program both athletic and social.

Undergraduates of Duke University, both men and women, who plan to attend the Summer Session should enroll with the Dean of their own college in Duke University. Undergraduates in other universities or colleges who seek transfer credits should apply directly to the Director of the Summer Session, Duke University, Durham, North Carolina.

Financial Information

THE prospective student who seeks the optimum opportunity in higher education will not be a bargain hunter. Certainly, some sound plan for paying the cost of college must be devised, but this plan should be formulated after the thoughtful selection of an institution has been made. No college or university can honestly say that an education at the college level is inexpensive. Most university people and the ever growing college alumni families across our nation will, however, reflect the feeling that the benefits derived from a college education constitute a handsome return on the dollars invested.

Each student going to college should analyze carefully his financial situation. In making such an analysis it should be recognized that the primary responsibility for defraying the cost of an education lies with the student and his family. The typical college student can depend upon some contribution from his family's current income, a proportionate share of family savings, and anticipated income from summer employment. The number of years of study contemplated and the number of dependent children in the family should be considered in computing the funds which will be available in a particular year.

Fees paid by the students cover only a part of the cost of their instruction and of the operations of the University. Income from endowment and contributions from the alumni, alumnae, and other public-spirited men and women meet the balance, which constitutes more than half the total cost.

ESTIMATED EXPENSES FOR AN ACADEMIC YEAR

Certain basic expenditures are to be considered in preparing a student's budget, such as tuition, the general fee, room and board. Incidental expenses, clothing, and travel depend to a large extent upon the tastes and habits of the individual. The estimated necessary expenditures are shown as follows:

	Undergraduate Men		*Undergraduate Women*	
Tuition	$ 850.00		$ 850.00	
General Fee	150.00		150.00	
Room Rent	200.00		225.00	
Board	500.00	(Cafeteria estimate)	450.00	(Board rate)
Laundry	75.00		75.00	
Books	50.00		50.00	
TOTALS	$1,825.00		$1,800.00	

It is realistic to suggest that the average Duke student will spend at least $175.00 annually for incidental items, including sundry clothing purchases and organizational dues. Travel costs and major expenditures would have to be added to these estimates.

Tuition and Fees

The tuition of $425.00 and the general fee of $75.00 are due and payable not later than the day of registration for a particular semester. After the day of registration no refund of the tuition or the general fee will be made except for involuntary withdrawal to enter the armed services.

New students, on notification of acceptance, are required to pay a non-refundable first registration fee of $20.00 and to make a deposit of $50.00. The $50.00 deposit will not be refunded to accepted applicants who fail to matriculate. For those who do matriculate, $25.00 of the deposit serves as a continuing room deposit for successive semesters, and the remaining $25.00 as a continuing registration deposit. Arrangements for refund of the $25.00 room deposit are described in information furnished each resident student by the Housing Bureau. The $25.00 pre-registration deposit will be refunded to students (1) whom the University does not permit to return, (2) who graduate, or (3) who request the refund at the time of pre-registration, thus indicating their intention not to return for the following semester. The pre-registration deposit will not be refunded to students who pre-register and fail to enter the following semester on schedule.

Students who have been re-admitted to the University after an absence of one or more semesters, on notification of readmission, are required to make the $50.00 room-rent pre-registration deposit.

An Air Force ROTC deposit of $20.00 is required of students enrolling in Air Science to cover possible loss of military equipment issued to them. This deposit is refunded to the student upon return of issued equipment.

Living Accommodations

Undergraduate students are required to live in the residence houses unless they are married or are living with parents or relatives. Any exception must be approved by the Dean. Rooms are rented for a period of not less than one semester. No refund will be made except for involuntary withdrawal to enter the armed services. Such refunds will be made in accordance with the University's established schedule.

In the residence houses for undergraduate men the rental charge for a single room is $250.00 for the academic year or $125.00 for each semester. The rental charge for a double room is $400.00 for the academic year or $200.00 for each occupant, or $100.00 per semester for each occupant.

In the residence houses for undergraduate women, the rental charge for a single room is $275.00 for the academic year or $137.50 for each semester. The rental charge for a double room is $450.00 for the academic year or $225.00 for each occupant, or $112.50 per semester for each occupant.

Regulations governing the occupancy of rooms will be supplied directly from the Housing Bureau when the reservations are made. Occupants are expected to abide by these regulations.

The dining facilities on the West Campus include three cafeterias with multiple-choice menus, and the Oak Room, where full meals and *a la carte* items are served. The cost for the academic year ranges from $450.00 upward depending on the tastes of the individual.

On the Woman's College Campus, dining halls are located in the Woman's College Union and in Gilbert-Addoms residence hall. Resident women will board in these halls. The charge for board is $225.00 per semester, payable at the time of registration.

Because of the large number served in the dining halls, it is not possible to arrange special diets for individual students.

Other Information

In the regular academic year students who register for no more than two courses with a maximum credit of 8 semester hours are classified as special students. They are charged a registration fee of $5.00 for each course and $28.50 for each semester hour of course credit. Registration for 9 or more semester hours, or 3 or more courses, requires payment of full fees.

Auditing of one or more courses without charge is allowed students paying full fees, provided that the consent of the instructor is obtained. Students who are enrolled for not less than 3 nor more than 8 semester hours may audit other courses by payment of $10.00 for each course audited. In order to encourage its employees in their professional and personal advancement, Duke University will permit full-time employees that are paid on a monthly basis to take one or two courses, but not more than seven semester hours and will charge $5.00 per course plus $12.50 per semester hour. Auditors submit no daily work, take no examinations, and receive no credit for courses audited.

One transcript is issued free of charge. Additional copies are supplied at $1.00 each.

No records are released and no student is considered by the faculty as a candidate for graduation until he has settled with the Treasurer for all indebtedness.

Bills may be sent to parents or guardians provided the Treasurer has been requested in writing to do so. Failure to pay bills on or before the due dates will debar the student from class attendance until the account is settled in full.

Student Aid

Duke University is interested in students with ability and ambition. It is the aim of the University Scholarship Committee and others affiliated with the Student Aid Program to provide, insofar as possible, the financial assistance required by students accepted for entrance who are unable to defray the cost of college from their own resources. The assistance is made available in the form of scholarships, loans, and part-time jobs.

In 1959-60 student aid totalled approximately $910,000 allotted to 897 students. Of this amount $550,000 was granted in scholarships, and $160,000 in student loans. The remainder was earned through part-time employment.

Freshman students shared proportionately in this aid: 412 received scholarships totalling $221,000.00.

SCHOLARSHIPS: All requests for applications for scholarships, grants-in-aid, industry scholarships or remissions of tuition should be addressed to the Office of Admissions, Duke University, Durham, North Carolina.

All candidates for scholarships and grants-in-aid must complete an official Application for Admission to the University and must forward the Application for Scholarship to the Student Aid Office, 217 Allen Building. Scholarship candidates who desire to be considered for the maximum value of scholarships on the basis of financial need are required to complete the "Parents' Confidential Statement" of the College Scholarship Service. The "Parents' Confidential Statement" may be obtained from high school principals or upon request from the Student Aid Office.

Scholarship candidates should initiate their applications during the fall semester of their senior year of study in secondary schools. Instructions concerning the specific requirements and deadline dates will accompany the application materials sent to applicants for scholarships and grants-in-aid.

All candidates for scholarships or grants-in-aid are required to take the Scholastic Aptitude Test of the College Entrance Examination Board. This test must be taken in either December or January in the senior year of secondary school study.

Awards annually available to undergraduate students at Duke University fall into five major categories. These are:

(1) *Angier B. Duke Memorial Scholarships:* Recipients of these awards are students whose superior records mark them as young men and young women who give outstanding promise of becoming leaders in their chosen fields of endeavor.
Number available: 35 for each Freshman class.
Value: $500.00 to $1,800.00 annually.

(2) *Duke University School of Nursing Scholarships:* Recipients of these awards are young women whose superior records indicate outstanding promise of becoming leaders in the profession of Nursing.
Number available: 11 for each Freshman class.
Value: $500.00 to $1,000.00 annually.

(3) *Grants-in-aid:* Recipients of these awards are able students who need financial assistance in order to meet the cost of attending college.
Number available: Approximately 400 annually.
Value: From $100.00 to $900.00 annually.

(4) *Remissions of Tuition:* Recipients of these awards are entitled to a maximum of eight semesters of free tuition at the undergraduate level. Students qualified for this consideration are:
Group I: Children of ministers in the North Carolina and Western North Carolina Conferences of the Methodist Church, and children of ministers of all faiths residing in Durham County.
Group II: Children, step-children, and adopted children of certain qualified staff members of Duke University.

(5) *Corporate Scholarships:* Certain scholarships financed by private corporations are available annually to undergraduate students at Duke University. The selection of the recipients of these awards is made by the University Scholarship Committee. These scholarships are assigned to students whose records of scholarship and leadership are outstanding and whose financial need can be demonstrated.
Number Available: 18.
Value: $500.00 to $2,000.00 annually.

RELIGIOUS VOCATIONS SCHOLARSHIPS: Students preparing to enter full-time religious work are eligible to apply for special consideration on the basis of need. These students will be required to submit the "Parents' Confidential Statement." Students with need will be recommended by the Executive Secretary of the University Scholarship Committee to the Christian Vocations Scholarship Com-

mittee which will consider the intention of the applicant. Students approved by the Christian Vocation Scholarship Committee are required to sign a note each semester for the amount of financial assistance granted to them by the University Scholarship Committee. These notes will be cancelled upon evidence that the student has entered full time Christian work after graduation. Pre-ministerial and religious education students ranking in the upper quarter of their graduating classes are encouraged to apply for an Angier B. Duke Memorial Scholarship.

STUDENT LOANS: Loans covering tuition and other expenses are available to students who have completed at least one semester in residence and whose records have been satisfactory. Loans generally mature after borrowers have left the Univesity. Loan interest on long term loans accrues at the rate of 1% from the date of each note. After a student has left the University permanently, the loans begin bearing interest at the rate of 3% per annum to continue for the following five-year required payment period.

In addition to local loan funds, Duke University participates in the student loan program established under the provisions of the National Defense Education Act of 1958. The attractive terms offered to students under the National Defense Education Act offer a practical solution to students who need assistance to defray college costs.

The Student Loan Committee in approving loan selects those students who, from the standpoint of character, scholastic attainment, personality and degree of financial need, are deserving of this consideration. All applications for loans should be made to the Executive Secretary, University Scholarship Committee.

STUDENT EMPLOYMENT: Student employment offices are maintained to serve students who need part-time jobs. There are many opportunities both on the campus and in the city of Durham, and a considerable number of students each year help defray their college expenses by working.

Students may apply for part-time employment after they have received official notification of acceptance from the Office of Admissions. Such requests for employment should be made by letter prior to the date of entrance.

Those students in Trinity College and the College of Engineering in need of part-time employment should apply to the Student Aid Office, 217 Allen Building, Duke University, Durham, North Carolina. Students in the Woman's College should apply to the Assistant Dean of Undergraduate Women, 108 East Duke Building, Duke University, Durham, North Carolina.

Medals and Prizes

THE achievements of undergraduate students are recognized in various fields of college activity. The following prizes suggest the range of the recognition:

The *Debate Council* authorizes the awarding of medals to members of the graduating class who have represented the University in at least two intercollegiate debates. The medals are given by the local chapter of the Tau Kappa Alpha Fraternity.

The Robert E. Lee Prize is the gift of The Reverend A. W. Plyler, of the class of 1892, and Mrs. Plyler. The sum of $50 is awarded annually at Commencement, preferably to that member of the senior class of Trinity College or the College of Engineering who, in character and conduct, in scholarship and athletic achievement, in manly virtues and capacity for leadership, has most nearly realized the standards of the ideal student. The Vice President in the Division of Student Life, the Graduate Manager of Athletics, and the President of the Student Council constitute a committee to draft and adopt regulations governing the award.

Alpha Kappa Psi Medallion. Beta Eta Chapter of Alpha Kappa Psi, a professional fraternity in commerce, awards annually the Alpha Kappa Psi Scholarship Key to the male senior student pursuing a degree in the Department of Economics and Business Administration who has attained the highest scholastic average for three years of collegiate work in this University.

Medal of the North Carolina Association of Certified Public Accountants. The North Carolina Association of Certified Public Accountants annually awards a medal to the senior who, in the judgment of his instructors, is the most outstanding student in accounting in his graduating class.

Julia Dale Prize in Mathematics. This is a prize of books given annually to the undergraduate who shows the greatest proficiency in the study of calculus.

The Milmow Prize: Consists of a certificate of award and a one year's payment of dues in the American Institute of Electrical Engineers for the membership year in which the honoree is awarded his baccalaureate degree. It is awarded annually to that student from North or South Carolina graduating in the Department of Electrical Engineering who, in the opinion of the faculty of that department

and as shown by his grades, has made the most progress in electrical engineering during his last year in college.

The George Sherrerd III Memorial Award in Electrical Engineering was established in 1958 by the parents of George Sherrerd III, a graduate of the class of 1955, to recognize outstanding undergraduate scholarship. This award, consisting of the income from a fund of $5000.00, is made annually to that senior student in Electrical Engineering who, in the opinion of the Electrical Engineering faculty, has attained the highest level of scholastic achievement in all subjects and simultaneously has rendered significant service to the College of Engineering and the University at large. The recipient's name is inscribed on a plaque displayed in the Engineering Building.

The Charles Ernest Seager Memorial Award, established in 1958 by the widow and friends of Charles Ernest Seager, a graduate of the class of 1955, recognizes outstanding achievement in the annual Student Prize Paper Contest of the Duke Branch of the American Institute of Electrical Engineers. The award consists of inscribing the name of the contest winner on a plaque displayed in the Engineering Building.

The American Society of Civil Engineers Prize consists of a certificate of award and a one year's payment of dues in the American Society of Civil Engineers. Awards are made annually by the North Carolina Chapter to the two outstanding seniors in civil engineering based on the recommendation of the faculty of the Civil Engineering Department. The basis for selection is the student's scholastic record, his contribution to the Student Chapter, and his participation in other college activities and organizations.

The Tau Beta Pi Prize. The North Carolina Gamma chapter of Tau Beta Pi engineering national honorary society, awards each year a suitable prize, such as an engineering handbook, to a sophomore student in engineering for outstanding scholastic achievement during the freshman year.

The Phi Lambda Upsilon Prize. Phi Lambda Upsilon, honorary chemical society, yearly awards a suitable prize to an outstanding junior who is majoring in chemistry. The recipient's name is inscribed on a plaque displayed in the Chemistry Library.

The Pegram Chemistry Club Prize is awarded in the spring of each year for scholarship in chemistry, physics, and mathematics. The prize consists of a one-year junior membership in the American Chemical Society and a one-year subscription to either the *Journal of the American Chemical Society* or *Industrial and Engineering Chemistry.* To qualify for this prize, the student must (1) be enrolled as an undergraduate of Duke University and (2) be taking or have taken a fourth-

year chemistry course. The winner of this prize is selected by a committee consisting of at least one faculty member and at least two members of the Pegram Chemistry Club; the selection is based on the quality-point average for all courses taken in chemistry, physics, and mathematics. In case of a tie equal awards are given.

The James B. Rast Memorial Award in Comparative Anatomy is given annually by the parents of James Brailsford Rast in memory of their son, a member of the class of 1958 at Duke University. The award, consisting of the *Atlas of Descriptive Human Anatomy* by Sobotta and bearing the James B. Rast Memorial bookplate, is given to the student who demonstrates the greatest achievement in the study of Comparative Anatomy.

The Erasmus Club Prize in the Humanities. The Erasmus Club is composed of a group of Duke faculty members interested in research in language, literature, and the arts. It seeks to stimulate interest and study in these fields. To encourage undergraduate students in this field, the Erasmus Club has established an annual prize amounting to $25.00, for the best original essay by an undergraduate which embodies the results of research, criticism, or evaluation in some subject in the humanities. Prospective competitors should consult some member of the faculty, preferably their major professor. Essays must be typewritten and must be submitted to the president of the club before the first of April. The club reserves the right to withhold the prize in case there are no essays of acceptable quality.

The Anne Flexner Memorial Award in Creative Writing has been established by the family and friends of Anne Flexner, who graduated from Duke in 1945. It consists of fifty dollars in cash and a number of books chosen by the student. The award is given annually for the best piece of creative writing submitted by a Duke undergraduate. The competition is limited to short stories (5,000-word limit), one-act plays (5,000-word limit), poems (100-line limit), and informal essays (3,000-word limit). Only one manuscript may be submitted by a candidate, and manuscripts must be delivered to the English Office, Room 325 Allen Building, before April 15.

The William Senhauser Prize is given by the mother of William Senhauser in memory of her son, a member of the Class of 1942, who lost his life in the Pacific Theatre of War on August 4, 1944. The award is made annually to the sophomore or junior in Trinity College or the College of Engineering who has made the greatest contribution through participation and leadership in intramural sports. The winner of this prize is chosen by a committee selected by the President of the University.

The *Friends of Duke University Library* offer three prizes of $25.00, $15.00, and $10.00, in an annual contest open to all undergraduate students for the best book collections acquired during their college years. The contest is supervised by the Undergraduate Committee of the Friends of the Library, which announces each fall the terms of the award. Inquiries may be directed to the Curator of Rare Books. Collections entered in the contest are exhibited each spring in the General Library. The prizes are awarded on the basis of the student's collection, a personal interview to determine the overall planning and objectives of his collecting activity, and his familiarity with his own books and the general field of his collecting interest.

The William T. Laprade Prize in History in honor of William T. Laprade, who was a member of the History department at Trinity College and Duke University from 1909 to 1953, and chairman of the department from 1938 to 1952. This prize is awarded to that senior who is graduating with distinction, and whose senior essay in history has been judged unusually meritorious.

Algernon Sydney Sullivan Award. This award is provided by the New York Southern Society. Three awards may be made each year: one to a member of the senior class of Trinity College or the College of Engineering, one to a senior in the Woman's College, and one to a member of the staff of the University or the community. "In the selection of the recipients nothing shall be considered except the possession of such characteristics of heart, mind, and conduct as evince a spirit of love for and helpfulness to other men and women."

General Academic Regulations

QUANTITY CREDIT AND COURSE LOAD: The term of credit used is the semester hour, which signifies one class period a week throughout the semester. Two or three hours of laboratory work are equivalent to one hour of class work. Two semesters of seventeen weeks each constitute the academic year. For the degree of Bachelor of Arts or Bachelor of Science, credit for 124 semester hours is required; for a degree in Engineering, 148 semester hours.

The normal load of an undergraduate student in Trinity College and the Woman's College is four or five academic courses totaling 14 to 17 semester hours, exclusive of physical education. The maximum number permitted is 19 semester hours, exclusive of physical education. In the College of Engineering the normal load is 17 to 19 semester hours, exclusive of physical education. No student is permitted to take less than 14 semester hours of work without special permission from the dean or to take more than the normal load of work unless his average grade in the preceding semester is higher than C.

QUALITY CREDIT: The requirements for the degree are computed in semester hours and in quality points. Quality points are determined by grades as follows: for an A, four quality points for each semester hour; for a B, three quality points for each semester hour; for a C, two quality points for each semester hour; for a D, one quality point for each semester hour; for an F, no quality points. Credit for at least 248 quality points is required for the degree of Bachelor of Arts or Bachelor of Science, and at least 296 quality points for a degree in engineering.

REQUIREMENTS FOR CONTINUATION IN COLLEGE AND FOR GRADUATION FROM COLLEGE: To continue in college students must, in addition to the requirements listed elsewhere in this Bulletin, pass a minimum number of semester hours, achieve a specified quality point ratio, and earn a minimum number of quality points. The quality point ratio is calculated by dividing the accumulated number of quality points earned by the accumulated number of semester hours carried (not semester hours passed). These requirements are listed in the following table:

For continuation from	The minimum requirement is
The first to the second year	18 s.h. credit and a q.p.r. of 1.2
The second to the third year	42 s.h. credit and a q.p.r. of 1.4
The third to the fourth year	66 s.h. credit and a q.p.r. of 1.6
The fourth to the fifth year, if needed	90 s.h. credit and a q.p.r. of 1.75

In order to graduate, the student must meet additional minimum requirements, as follows:

For graduation from	The minimum requirement is
Trinity and the Woman's College	124 s.h., 248 q.p. and a q.p.r. of 1.9
The College of Engineering	148 s.h., 296 q.p. and a q.p.r. of 1.9

Students of the senior class, irrespective of their average grade in preceding years, must, in order to be eligible for graduation, complete the work of their senior year with a minimum average grade of C. In the case of engineers the C average requirement applies not only to all courses taken in their last year but also to work specified for the senior year in their particular engineering curriculum.

The minimum standards for continuation in the College of Engineering are the same as those listed above, but since the semester hour requirement for graduation in engineering exceeds the requirement of the other colleges, the standards may be adjusted to meet the special requirement of the college. Moreover, application of these standards is based on the courses required in the engineering curriculum.

In addition to the qualitative standards listed above students must pass a minimum number of hours each semester. Freshmen must pass at least 6 semester hours of work, exclusive of physical education, in their first semester and 18 semester hours, exclusive of physical education, in their first year; second semester freshmen and all other students must pass at least 9 semester hours, exclusive of physical education, each semester. The University may require a student whose record is considered unsatisfactory to withdraw, although he has met the minimum requirements set forth in this paragraph.

Reports on proficiency in academic work are sent to parents or guardians after the examinations at the end of each semester. In addition, reports on freshmen are mailed at each mid-semester period.

CLASS STANDING: In Trinity College and the Woman's College to rank as sophomores students must have to their credit at least 26 semester hours and 52 quality points; as juniors, at least 56 semester hours and 112 quality points; and as seniors, at least 90 semester hours and a quality point ratio of 1.75. In the College of Engineering to rank as sophomores they must have to their credit at least 30 semester hours and 60 quality points and must have passed certain specially designated courses of the freshman engineering curriculum; to rank as juniors they must have at least 68 semester hours and 136 quality points and must have passed certain specially designated courses of the sophomore departmental engineering curriculum; and to rank as seniors they must have at least 106 semester hours and a quality point ratio of 1.75 and must have passed certain specially designated courses of the junior departmental engineering curriculum.

In Trinity College and the Woman's College seniors may not take for graduation credit any course open primarily to freshmen, and juniors may not take for graduation credit more than one course open primarily to freshmen. With the consent of the department, however, majors in mathematics, the natural sciences, and science education may, as juniors or seniors, enroll for credit in the introductory courses in the natural sciences and mathematics.

Seniors who at the beginning of a semester lack no more than 9 semester hours for the fulfillment of the requirements for the A.B. or B.S. degree, with the approval of the Dean of the Graduate School, may enroll in graduate courses for a maximum total program of fifteen hours a week.

A tentative list of all candidates for the Bachelor's degree is prepared under the supervision of the dean as early in the college year as possible. A copy is furnished to each department of instruction for information and reference, and a copy is posted on the official bulletin board of the University for the information of the students concerned.

RESIDENCE REQUIREMENTS: A minimum of 30 semester hours of senior-level work in Trinity College and the Woman's College and 36 in the College of Engineering must be earned in residence. Students who meet this requirement but who still lack 6 to 8 semester hours in final fulfillment of requirements may take this work in another institution of approved standing, provided the course is approved by the head of the department concerned and by the dean.

Students who complete in a summer session the work required by the University for the Bachelor's degree will be granted the degree at the end of the summer.

GRADING, ATTENDANCE, AND EXAMINATIONS:

Grading: Final grades are reported to indicate passing or failing work in designated courses. Final grades are:

(1) *Passing.* Passing grades are A, exceptional; B, superior; C, average; and D, low pass.

(2) *Failing.* A grade of F indicates that the student has failed the course and that in order to receive credit for the course he must repeat the work in class.

Special symbols are used to indicate the following:

(1) *Absence from the final examination.* In all cases in which the student is absent from a final examination, he receives an X in place of a final grade. If he does not present an acceptable explanation for his absence to the appropriate dean's office within forty-eight hours after the scheduled time for the examination, the X is converted to an F. A student absent from examination, if the absence has been excused by the dean, may receive an examination upon payment of a

fee of $5.00 to the Treasurer of the University. The instructor concerned arranges for examination in cases where absences are excused. An X must be cleared by the end of the semester following the examination missed.

(2) *Incomplete work.* If because of illness or other emergency a student's work in a course is incomplete, he may receive an I for the course instead of a final grade. Incomplete courses must be completed before the close of the succeeding semester, otherwise, the I is recorded as F and the course must be repeated in class if the student is to receive credit for it. In case a student whose work is incomplete is also absent from a final examination, he receives an X for the course.

(3) *Withdrawal.* The letter W is used to indicate official withdrawal from a course. If a student drops a course without permission from the dean, the grade for that course is recorded as F. If he drops with permission a course in which he is failing, the grade for that course is recorded as F unless, in the judgment of the dean, circumstances do not justify this penalty.

ATTENDANCE: Regular and punctual attendance in class work is expected of all students. Weekly reports of all absences, irrespective of class standing, are made by each instructor and filed in the dean's office. No instructor has the authority to excuse a student from class attendance; it is his duty to report all absences and tardies.

The requirements for continuation in college and for graduation from college emphasize the desirability of assumption by the student of responsibility for class attendance. Controls are exercised and responsibility is placed on the student.

(1) *General regulations for all students:* One unexcused absence per semester hour without penalty is allowed for personal obligations.

The first three tardies in a given course are counted as one absence. Thereafter, each additional tardy is counted as one additional absence.

Absences due to illness when certified by a proper medical official will be excused. Absences due to authorized representation of the University may be excused. Officials in charge of groups representing the University are required to submit names of those persons to be excused to the appropriate dean's office forty-eight hours in advance of the hour when their absences are to commence. Absences due to individual and personal reasons will not be excused.

All absences immediately before and after announced holidays are counted as regular absences, and they result in a loss of two quality points for each absence in each class. Unexcused, consecutive absences, whether excessive or not, result in the loss of quality points as in the case of unexcused, excessive absences. Each excessive or consecutive absence results in the loss of quality points as follows: one quality point for the first absence, two additional for the second, and three

additional for the third. When the third unexcused, excessive or consecutive absence occurs, the student is debarred from the course with a loss of six quality points and an F in the course. When the student has incurred twelve absences, excused and unexcused, in any course he is required to drop the course unless the instructor and the dean concerned grant special permission for him to continue in the course.

When a student's course load is reduced, on account of excessive absences, to less than 12 semester hours, he is required to withdraw from the University.

(2) *Special regulations for Upper Class Students with academic averages of B or above:* Although responsibility for punctual and regular class attendance is placed upon the individual student, all sophomore, junior, and senior students who, in a normal schedule, earn a grade average of 3.0 or above in the preceding semester will be subject to no fixed absence limitation. However, for absences before and after announced holidays two quality points are deducted for each absence in each class. Instructors are expected to refer to the dean for appropriate action any student who in their opinion is causing his work or that of the class to suffer because of absences or tardies.

Examinations: Final examinations are held in all subjects in January and May.

DEFICIENCIES IN COMPOSITION: The following regulations have been adopted by the Faculty:

1. In the fall of the junior year every student of Trinity College and of the Woman's College with the following exceptions must take an examination in English usage: (a) students exempted from English 1 and (b) students who earned grades of at least B and C in English 1-2. The regulation does not apply to students of the College of Engineering, which has special course requirements in English composition in addition to English 1-2. Students with irregular schedules resulting from acceleration or transfer to Duke after the fall of their junior year should take the examination in the fall of the year most nearly approximating the fifth semester. In any event, all students with the exceptions noted above must take this examination; *it is a requirement for graduation.* Any student desiring to postpone his examination must have permission in writing from the dean. If a student does not have this permission and fails to take the examination at the scheduled time, he will be permitted to take it on the date appointed for the make-up examination upon the payment of a $5.00 fee. If the student fails to appear for the make-up examination and has no acceptable excuse, he will be personally responsible for arranging with the Bureau of Testing and Guidance to take this examination upon the payment of a fee of $10.00. Until this examination is taken,

the student will not be permitted to complete registration for the following semester. Students who are adjudged deficient by this examination will be required to complete satisfactorily a non-credit laboratory course in remedial English.

2. Whenever the work of a student in any course is unsatisfactory because of errors in English, the instructor may report the student to the dean, who will require him to enroll in remedial English until, in the opinion of the director of the Remedial Laboratory, the deficiency is removed.

3. All instructors are requested to inform their students each semester concerning this regulation.

ADVANCED PLACEMENT: Placement in advanced sections of freshmen courses, or in courses beyond the freshman level, may be approved on the basis of tests administered at the University during Orientation Week or from the results of the Advanced Placement Program of the College Entrance Examination Board. The undergraduate departments of instruction and the deans of the colleges are charged with the responsibility for evaluations leading to advanced placement of freshman matriculants. Advanced Placement Tests are given in May by the College Entrance Examination Board. Information regarding the tests may be obtained from the Board.

ADVANCED PLACEMENT COURSE CREDIT: Any student who has participated in the Advanced Placement Program of the College Entrance Examination Board may apply for course credit in appropriate subjects. The award of course credit will be determined with the approval of the University department concerned and will be made no earlier than the end of the first semester. Course credit may be granted for one or two semesters in each subject area in which examination is offered in the Advanced Placement Program.

TRANSFER CREDITS. Transfer credit, in which grades of C or above have been earned, is rated at two quality points per semester hour. Courses in which grades of less than C have been earned are not acceptable for transfer credit.

Although credit for work completed at other institutions will be determined in relation to the curriculum requirements of the college in which the student enrolls at Duke, an overall average grade of C on all previous work taken is required before consideration for advanced standing may be given.

A student who transfers with advanced standing to Trinity College or the Woman's College from a junior college must continue, for at least one semester in Trinity College or in the Woman's College, the foreign language he or she presents for minimum graduation requirements. Credit for courses in science offered for advanced standing in

any of the undergraduate colleges by a transfer from a junior college will be determined by the departments concerned.

The maximum amount of credit acceptable from a junior college is 60 semester hours, exclusive of physical education. No credit is given for work completed by correspondence, and credit for no more than six semester hours is allowed for extension courses. Any extension work accepted must be specifically approved by the dean of the college to which the student seeks admission.

ADMISSION OF SPECIAL STUDENTS: Students of mature age may be admitted for special work in such courses of instruction as they are qualified to take. They may not be admitted as candidates for a degree in a regular course unless they meet all normal requirements for admission.

READMISSION OF FORMER STUDENTS: A student who, following withdrawal from college, desires to return should apply to the Registrar, and send a detailed statement of his activities since withdrawal from college.

JUNIOR YEAR ABROAD: With the approval of the dean of the college concerned, students may be permitted to take their junior year abroad under the auspices of an approved group or at an acceptable accredited institution. Courses to be taken must be approved by the dean before the venture is undertaken.

Academic Honors

To be eligible for Honors a student must earn, during the year, credit for at least the minimum academic load permitted by the college in which he is registered. All semester hours on which a student receives a grade are counted in the determination of Honors. Students in the freshman, sophomore, and junior classes who earn an average of at least three and one-half quality points per semester hour are given Honors.

The degree of Bachelor of Arts or of Bachelor of Science with distinction is conferred in accordance with the following rules:

To be eligible for consideration for general Honors at graduation a student must have completed in residence a minimum of ninety semester hours. Students who earn an average of at least three and one-half quality points per semester hour are recommended for a degree *magna cum laude.* Those who earn an average of at least three and three-fourths quality points per semester hour are recommended for a degree *summa cum laude.*

Graduation with distinction in his major department is awarded to the student who, in the opinion of the department and of a special committee of the faculty, has demonstrated exceptional achievement in the area of his special interest.

Other Regulations

CONDUCT AND DISCIPLINE: The University expects of its students loyal and hearty cooperation in developing and maintaining high standards of conduct as well as of scholarship. General University regulations concerning conduct of students will be made available to students when admission is offered, or under other circumstances, upon request. The student in accepting admission indicates his willingness to subscribe to those regulations. The University therefore reserves the right, and matriculation by the student is a concession of this right, to ask the withdrawal of any student whose conduct at any time is not satisfactory to the University, even though no specific charge may be made against the student.

General oversight of the conduct of students and the administering of discipline are under the supervision of the Vice-President in the Division of Student Life. Immediate supervision is entrusted to the Dean of Men and the Dean of Women. However, through the expressed willingness of the students of the University to assume the responsibility of maintaining high standards of morals and honor, the student body has properly become to a great degree self-governing. Two councils, one of men and the other of women, each composed of duly elected representatives of the student body, exercise the authority granted the students for their respective colleges to investigate all cases of misconduct, as well as all other cases of violation of proper student standards and traditions, and to make recommendations of penalties based on their findings. They exert a guiding and stimulating influence for the promotion of high ideals of conduct and of student relationships.

MOTOR VEHICLES: Freshmen are not permitted to own or operate motor vehicles at the University. Members of the upper classes of Trinity College and the College of Engineering and senior students of the Woman's College may operate motor vehicles, however, when in accordance with University regulations.

Students permitted to operate motor vehicles must register them annually at the beginning of the fall semester, or if the vehicle is acquired later, within five days after bringing it to the campus. Such students must show a state vehicle registration and a state operator's license, and also a standard certificate of automobile liability insurance, issued by a recognized company and evidencing coverage of at

least $5,000 per person and $10,000 per accident for personal injury and $5,000 for property damage.

Students under 21 years of age must have the written consent of parent or guardian before operating a motor vehicle at Duke.

SCHOLASTIC REGULATIONS FOR PARTICIPATION IN ATHLETIC AND OTHER ACTIVITIES: Students who received less than a passing grade on more than six hours of required work of the preceding term are ineligible to represent the University in any athletic contest, concert, or other public event.

Members of athletic teams or other student groups engaging in public representation of the University are expected to be carrying their current work satisfactorily. Students may be barred from participation in such representation if, in the opinion of the dean, they fail to meet this requirement.

ENROLLMENT AND REGISTRATION: Students in residence are required to submit to the appropriate dean, not later than the date of the spring registration, cards showing their selection of courses for the following year. Evidence of the payment of the continuing pre-registration deposit of $25.00 (see page 18 for detailed information) is required before the card may be submitted. These cards, approved by the dean, are filed for permanent record in the Central Records Office. Students who do not select their courses for the following year at the time appointed must be readmitted to the college by application to the Director of Admissions. Students whose course cards have been approved in the spring may enroll by mail during the summer. The same regulations, with the exception of the advance deposit, apply to registration for the spring semester.

Students who register in either semester at a date later than that prescribed in the calendar of the Bulletin must pay to the Treasurer a fee of $5.00. They are counted as absent in the work they have missed in the courses to which they are admitted, and these absences carry the same penalty as do other absences from the course. Changes in courses for reasons not arising within the University require a payment of $1.00 for each change made. No course may be elected later than one week after the opening of the semester, and no student may be admitted to any class without an official enrollment.

Requirements for Degrees

DUKE UNIVERSITY offers in Trinity College, the Woman's College, and the College of Engineering, courses of study which lead to the degrees of: Bachelor of Arts; Bachelor of Science; and Bachelor of Science in Civil, Electrical, or Mechanical Engineering.

Bachelor of Arts

The requirements for the degree of Bachelor of Arts are based on the principle that the student will derive the maximum benefit from his college work if his program includes a broad distribution of studies among representative fields of culture, concentration within a special field, and some work of his own choice.

For graduation with the degree of Bachelor of Arts, the following course work must be completed in accordance with the academic regulations as stated in this Bulletin.

Uniform Course Requirements	s.h.
English	6
Foreign Language	6–18
Natural Science	11
Religion	6
Social Science and History	12
Literature, Music, Art, and Philosophy	6
Physical Education	4
Major and Related Work	42
Electives to Make a Total of	124

These requirements are described in detail below.

ENGLISH, 6 s.h.—This requirement is met by the completion of English 1-2. Students whose competence in English usage is certified by Advanced Placement Program Scores may be allowed to substitute English 55 or 56 for English 1 or English 2.

FOREIGN LANGUAGE, 6 to 18 s.h.—This requirement is met by the completion of the third college year of a foreign language. The languages which meet this requirement are French, German, Greek, Latin, Russian, and Spanish. The number of courses required depends on previous training and ability as shown on placement tests. Students presenting for entrance four units of Latin may satisfy the language requirement by the completion of the third college year of Latin or by two years of Greek. In exceptional cases, on the recommendation of the language department concerned and with the approval of the dean of the appropriate college, a student who has completed the second college year of one language may satisfy the requirement by the completion of the first year of another language.

NATURAL SCIENCE, 11 s.h.—To satisfy this requirement a student must complete a laboratory course (8 s.h.) in one of the natural sciences (botany, chemistry, geology, physics, zoology), and one course of at least 3 semester hours selected from mathematics (except Mathematics 11), logic and scientific methodology (Philosophy 48, 103 and 104), or from the sciences listed above.

RELIGION, 6 s.h.—This requirement may be met in one of the following ways: (a) by completing, in the freshman year, Religion 1-2; (b) by completing, in the sophomore year or later, Religion 51-52; (c) by completing, in the sophomore year or later, Religion 55 and one other course selected from those numbered 60-99.

SOCIAL SCIENCE AND HISTORY, 12 s.h.—To satisfy this requirement a student must complete 12 semester hours from the following basic courses: Economics 51-52; Education 54, 104; History 1-2, or 51-52; Political Science 11-12, or 61-62; Psychology 91 to be followed, if desired, by either Psychology 100 or 101; or Sociology 91-92. Six of the 12 semester hours must be taken in economics, history, political science, or sociology. Students who do not present for entrance two acceptable units of history must take History 1-2 or 51-52.

LITERATURE, MUSIC, ART, AND PHILOSOPHY, 6 s.h.—This requirement can be satisfied by a total of 6 semester hours in courses in English or American literature, foreign literature courses numbered above 100, literature courses in translation, courses in aesthetics, art, and music, and courses in Philosophy, except 48, 101, 103, and 104

PHYSICAL EDUCATION, 4 s.h.—Physical education is required during each of the first two years and is normally completed by the end of the sophomore year.

MAJOR AND RELATED WORK, 42 s.h.—Prior to registration in the spring of his sophomore year, each student is required to choose his major field and confer with his departmental adviser about the requirements for major and related work.

The major work consists of 18 to 24 semester hours in one department above the introductory courses. Introductory courses may consist of two one-semester courses in all departments except the Departments of German, Latin, and Romance Languages, in which the introductory courses may consist of four one-semester courses. The choice of courses must be approved by the major department. The related work must be taken in at least two other departments and is selected subject to the approval of the major department and the dean of the appropriate college; it may not include more than one course of 6 or 8 semester hours open primarily to freshmen. With the consent of the department, however, majors in mathematics, the natural sciences, and science education may include as related work introductory courses in mathematics and the natural sciences. Courses satisfying the uniform course requirements may also be counted toward the requirements in major and related work.

The total amount of work that a student may take in any one department toward the Bachelor of Arts degree is limited to a maximum of 36 semester hours. In the Department of Aesthetics, Art, and Music, and the Department of Philosophy, the Department of English, the Department of Economics, Accounting and Business Administration, and the Department of Romance Languages, a total of 54 semester hours is permitted, however, provided a total of not more than 36 semester hours is taken in any one division of the department.

ELECTIVES.—In addition to the uniform courses required and the major and related work, other courses must be completed to make a total of at least 124 semester hours, including 4 semester hours of physical education.

Students whose courses of study permit may elect a maximum of 18 semester hours in engineering, forestry, or medical science. The courses elected in these subjects must be approved by the major department and the dean of the appropriate college.

CHOICE OF A MAJOR FIELD

The requirement of 42 semester hours distributed, as specified above, between a major field and related work is based primarily on the belief that some advanced study in one subject, together with work in allied subjects, is a valuable part of a general education. The selection of a major field usually depends on a student's cultural or vocational interests.

GENERAL PROGRAM

The General Program is designed for the student whose primary interest is in one of the liberal arts subjects. The subjects in which major work is offered are: art, botany, chemistry, economics, education, English, French, geology, German, Greek, history, Latin, mathematics, music, philosophy, physics, political science, psychology, religion, Russian, sociology, Spanish, zoology.

SPECIALIZED PROGRAMS

The student who has chosen a vocation may wish to include specialized training in his program. The following programs of study in preparation for various professions or professional schools are outlined for the guidance of the student.

BUSINESS: A specialized program is offered for students planning to enter business. A student electing this program must take, in addition to the uniform course requirements, the following courses in the indicated sequence.

Freshman Year:	Economics 11 (recommended but not required). Mathematics 21
Sophomore Year:	Economics 51-52, Economics 57-58.
Junior Year:	Economics 105, Economics 138, Economics 143, Economics 168. Economics 181, and one course selected from the following: Economics 144, Economics 147, Economics 158, Economics 182.
Senior Year:	Economics 153, Economics 188, Economics 191, and one course selected from the Economics group numbered above 100.

ACCOUNTING: A student who plans to qualify to take the Certified Public Accountant's examination should elect the following courses of study:

Freshman Year:	Economics 57-58 (may be taken at this time with the permission of the department).
Sophomore Year:	Mathematics 21 is required. Economics 51-52, Economics 171-172.
Junior Year:	Economics 143, Economics 153, Economics 173-174, Economics 181, 182.
Senior Year:	Economics 144 or Economics 184, Economics 275-276, and two courses from the following: Economics 175-176, Economics 177, Economics 178, Economics 180.

A student who does not take Economics 57-58 in the freshman year must take the course in the sophomore year and must make the necessary adjustments in the sequence of subsequent accounting courses.

Students majoring in accounting are urged to familiarize themselves with the educational requirements of the state in which they expect to practice.

RELIGIOUS WORK: A student who plans to enter the ministry or follow some other professional Christian vocation should have a broad

liberal arts background. Recommended majors are English, history, philosophy, religion, and sociology. It is desirable that the student include the following in his program:

English: 12-18 s.h. (including English 55, 56)
History: 6-12 s.h.
Philosophy: 6-12 s.h. (including Philosophy 93, 94)
Psychology: 12-18 s.h.
Social Sciences (other than history): 6-12 s.h.

These suggestions are in harmony with the recommendations of the American Association of Theological Schools for undergraduate courses of study.

Social Work: The student who plans to pursue professional studies in preparation for social work (such as family welfare, child welfare, public welfare, probation and parole, and similar forms of neighborhood and community work) should take his major work in sociology, with related work in other social sciences. The following courses should be included:

History 1-2, or 51-52.
Economics 51-52.
Political Science 61-62.
Psychology 91.
Philosophy (6 s.h.).

Zoology is recommended for the required course in Natural Science. Electives should be chosen mainly from history, economics, political science, education, sociology, philosophy, psychology, or religion.

Teaching: The program for students who intend to teach is designed to prepare for positions either in elementary or secondary schools. All prospective teachers, regardless of the type of school in which they expect to teach, must take Psychology 91, preferably during the sophomore year. Admission to student teaching (Education 101-102 or Education 215-216 is conditioned upon an average of 2.0 overall and in the major or teaching fields. Whatever their majors, they should consult an appropriate member of the Department of Education prior to each registration period so as to be sure of meeting certification requirements of the states in which they wish to teach, and of having places reserved for them in student teaching.

Elementary-School Teaching. Students preparing to teach in the elementary school must complete the following specific requirements: Education 101-102, 103, 118, 142, and 161, History 91-92, and Political Science 11-12, or 61-62, Economics 115, Economics 109, or 118, or 120, Music 151, Physical Education 102, and Health Education 134. Education 101-102 (which includes observation and practice teaching) should be reserved for the senior year.

Secondary-School Teaching. Students preparing to teach in secondary school may meet certification requirements by qualifying in one

teaching subject, but they are strongly advised to choose their electives to meet requirements in two teaching subjects. Prospective secondary-school teachers will ordinarily major in a subject other than education. This makes it extremely important that they establish contact with the Department of Education early as explained above. Courses in materials and methods should be taken prior to student teaching, which may be taken *only* in the senior year.

Science Education Major. Students who intend to teach high school sciences may elect to major in Science Education rather than in a department. The program is designed to meet certification requirements and to provide the broad background of training in the sciences which is needed by science teachers. Students planning to enter this program should consult an adviser in the Department of Education and in one of the science departments. The basic requirements are:

Education 103, 118, 215-216, and 276 or 246.
Mathematics 21 and 22.
Sciences (botany, chemistry, geology, physics, zoology) and mathematics above 22. 36-40 s.h.
1. Courses must be taken in at least two departments.
2. At least 12 s.h. must be taken in courses above the introductory level.

PREPARATION FOR GRADUATE SCHOOL: The student who plans to enter a graduate school of arts and sciences for advanced study should consult an adviser in the field of the proposed advanced study concerning suitable preparation. Most graduate schools have definite requirements in foreign languages for all students. Candidates for the degree of Doctor of Philosophy are required to pass reading examinations, usually in German and French. In some cases other languages may be substituted. As soon as practicable, the student should ascertain the requirements of the particular graduate school he desires to enter.

PREPARATION FOR LAW SCHOOL: Students who plan to study law may select their major work in any field. The following courses are recommended:

Economics 51-52, 57-58.
English 55-56.
History 1-2 or 51-52, 105-106.
Philosophy 48 and 91.
Political Science 61-62.
Sociology 91-92.

PREPARATION FOR MEDICAL OR DENTAL SCHOOL: Students planning to enter a medical or dental school should plan their programs of study from the first semester so as to include those courses required by the Medical Schools of their choice. Foundation courses for the study of medicine usually include: Chemistry 1-2, 61, 151-152; English 55-56; Mathematics 21, 22; Physics, 41-42; and Zoology 1-2, 53.

Special advisers are available for pre-medical and pre-dental students. The names of these advisers may be secured at the dean's office.

Bachelor of Science

For graduation with the degree of Bachelor of Science, the following course work must be completed in accordance with the academic regulations as stated in this Bulletin.

Uniform Course Requirements	s.h.
English	6
French, German, and Russian (second college year)	12–24
Mathematics	6
Natural Science	8
Economics, History, or Political Science	6
Religion	6
Restricted Elective	6
Physical Education	4
Major and Related Work	48
Electives to Make a Total of	124

These requirements are described below.

ENGLISH, 6 s.h.—This requirement is met by the completion of English 1-2. Students whose competence in English usage is certified by Advanced Placement Program Scores may be allowed to substitute English 55 or 56 for English 1 or English 2.

FOREIGN LANGUAGE.—Bachelor of Science candidates must normally complete at least the second college year, or equivalent as determined by examination, of two of the three languages, French, German, and Russian. In special cases, with the permission of the major department and the dean, this requirement may be met by the completion of the third year of one of these languages. On recommendation of the major department and approval of the dean another language may be substituted.

MATHEMATICS, 6 s.h.—This requirement may be met by completion of Mathematics 21 and 22.

NATIONAL SCIENCE, 8 s.h.—This requirement can be satisfied by courses in one of the natural sciences, namely, botany, chemistry, geology, physics, and zoology. The courses must include laboratory work, and may not be counted as part of the major or related work.

SOCIAL SCIENCE AND HISTORY, 6 s.h.—A sudent who does not present for entrance two acceptable units of history (exclusive of other social studies) must take a course in history; otherwise, he has his choice of economics, history, or political science.

RELIGION, 6 s.h.—This requirement may be met in one of the following ways: (a) by completing, in the freshman year, Religion 1-2; (b) by completing, in the sophomore year or later, Religion 51-52; (c) by completing, in the sophomore year or later, Religion 55 and one other course selected from those numbered 60-99.

RESTRICTED ELECTIVE, 6 s.h.—To meet this requirement 6 semester hours in addition to other uniform course requirements must be selected from aesthetics, art, economics, education, English, foreign language, history, music, philosophy, political science, religion, and sociology.

MAJOR AND RELATED WORK, 48 s.h.—Major and related work consists of 48 semester hours in the Natural Sciences. This work must be selected from the departments of botany, chemistry, geology, mathematics, physics, psychology, and zoology. The major work consists of not less than 24 semester hours in one department, the choice of courses being subject to the approval of the department. The major work does not include courses primarily open to freshmen. The related

work is taken in at least two other departments and is selected subject to the approval of the major department. With the consent of the department majors in mathematics and the natural sciences may include as related work introductory courses in mathematics, the natural sciences, and science education. A minimum of 14 semester hours of related work is required, 8 hours of which must be in laboratory science.

ELECTIVES.—In addition to the above, the student must elect sufficient courses to complete, with a quality point ratio of 1.9, the 124 semester hours necessary for graduation.

Students whose courses of study permit may elect a maximum of 18 semester hours in engineering, forestry, or medical science. The courses elected in these subjects must be approved by the major department and the dean of the college.

The total amount of work that a student may take in any one department toward the Bachelor of Science degree is limited to a maximum of 40 semester hours.

On or before the date announced for the spring registration, every sophomore in this group should select his major department in the Natural Sciences and arrange, under the guidance of an adviser in the major department, his program of studies for the following year. He should obtain the adviser's written approval of all courses selected in the division before submitting his program to the dean for final action. In like manner, each upperclassman will recheck the courses in his division of concentration each year with a representative of his major department.

Bachelor of Science in Civil, Electrical, or Mechanical Engineering

The College of Engineering offers fully accredited four-year programs in civil, electrical, and mechanical engineering leading to the degrees of B.S. in C.E., B.S. in E.E. and B.S. in M.E.

To facilitate and encourage the combining of a maximum of liberal arts studies with professional training, the College of Engineering has developed a special plan of cooperation with approved liberal arts colleges. Under this "three-two" plan, an outstanding student may follow an approved program of study at the cooperating liberal arts college for an initial period of three years and then come to Duke University to complete his studies at the College of Engineering in two more years. At the end of the total period of five years, a degree is granted by the cooperating liberal arts college, and a degree of Bachelor of Science in the appropriate branch of Engineering by the College of Engineering. Inquiries concerning this plan should be addressed to the Dean, College of Engineering, Duke University, Durham, North Carolina.

GROUPS OF STUDIES FOR THE DEGREE OF BACHELOR OF SCIENCE IN CIVIL, ELECTRICAL, OR MECHANICAL ENGINEERING

Uniform Freshman Year

FIRST SEMESTER			S.H.
Engrg	1	Engineering Drawing	2
Engl	1	English Composition	3
Hist	E1	U. S. in World Today	3
Math	21	Introductory Calculus	3
Phys	41	General Physics	4
Approved Elective			3
PE		Physical Education	1
			19

SECOND SEMESTER			S.H
Engrg	2	Descriptive Geometry	2
Engl	2	English Composition	3
Hist	E2	U. S. in World Today	3
*Math	22	Introductory Calculus	3
Phys	42	General Physics	4
Approved Elective			3
PE		Physical Education	1
			19

CIVIL ENGINEERING

Sophomore Year

FIRST SEMESTER			S.H.
Chem	1	Gen. Inorg. Chemistry	4
*CE	61	Surveying	5
Econ	51	Principles of Economics	3
Engrg	57	Statics	3
Math	63	Intermediate Calculus	3
PE		Physical Education	1
			19

SECOND SEMESTER			S.H.
Chem	2	Gen. Inorg. Chemistry	4
CE	72	Materials Laboratory I	1
Econ	52	Principles of Economics	3
*Engrg	107	Mechanics of Materials	3
Engrg	109	Materials Laboratory	1
Engl	E93	Written and Oral Communication	3
Math	64	Intermediate Calculus	3
PE		Physical Education	1
			19

Junior Year

FIRST SEMESTER			S.H.
CE	101	Materials Laboratory II	1
CE	113	Route Surveying	3
*CE	131	Structural Mechanics I	3
CE	135	Soils Mechanics	2
Engrg	115	Dynamics	3
†Electives			6
			18

SECOND SEMESTER			S.H.
CE	118	Engineering Materials	2
CE	140	Structural Mechanics II	3
EE	123	Fundamentals of EE	3
EE	125	EE Fundamentals Lab	1
*Engrg	128	Fluid Mechanics	3
†Electives			6
			18

Senior Year

FIRST SEMESTER			S.H.
CE	123	Hydraulic Engineering	3
CE	132	Structural Design I	4
CE	137	Seminar	1
ME	103	Thermodynamics	3
ME	116	ME Laboratory	1
†Electives			6
			18

SECOND SEMESTER			S.H.
CE	116	Transportation Engrg	3
CE	124	Sanitary Engineering	3
CE	133	Structural Design II	4
CE	146	Professional Engineering	2
†Electives			6
			18

*Courses which must be passed before engineering academic standing can be advanced.

†Part of a program of twenty-four semester hours of electives planned with departmental approval to suit the interests and abilities of each student. The program will include Mathematics 111 or a prescribed course in geology; an additional nine semester hours in mathematics, the sciences, or technical subjects; and another nine semester hours in the humanities or the social sciences.

ELECTRICAL ENGINEERING

Sophomore Year

FIRST SEMESTER			S.H.
Chem	1	Gen. Inorg. Chemistry	4
Econ	51	Principles of Economics	3
EE	53	E. E. Fundamentals	1
EE	55	Electric Circuits	4
†Approved Elective			3
Math	63	Intermediate Calculus	3
PE		Physical Education	1
			19

SECOND SEMESTER			S.H.
Chem	2	Gen. Inorg. Chemistry	4
Engl	E93	Written and Oral Communication	3
*EE	56	Electric Networks	4
Engrg	60	Statics-Strength	4
Math	64	Intermediate Calculus	3
PE		Physical Education	1
			19

Junior Year

FIRST SEMESTER			S.H.
EE	109	Electromagnetic Systems	4
EE	111	Electrical Prin. Lab.	2
Engrg	115	Dynamics	3
Math	111	Applied Math Analysis I	3
Phys	161	Modern Physics	3
†Humanities-Social Studies Elective			3
			18

SECOND SEMESTER			S H.
*EE	110	Electromagnetic Systems	4
EE	112	Electrical Prin. Lab.	1
Engrg	128	Fluid Mechanics	3
Math	112	Applied Math Analysis II	3
ME	103	Thermodynamics	3
ME	116	M. E. Laboratory	1
†Humanities-Social Studies Electives			3
			18

Senior Year

FIRST SEMESTER			S.H.
EE	165	Senior Seminar	1
EE	181	Electronic Networks	3
EE	183	Electronics Laboratory	1
EE	191	Electric Machinery	3
EE	193	Elec. Mach. Laboratory	1
†EE Elective			3
†Approved Elective			3
†Humanities-Social Studies Elective			3
			18

SECOND SEMESTER			S H.
EE	166	Senior Seminar	1
EE	182	Electronic Networks	3
EE	184	Electronics Laboratory	1
EE	192	Electric Machinery	3
EE	194	Elec. Mach. Laboratory	1
†Approved Elective			3
†Approved Elective			3
†Humanities-Social Studies Elective			3
			18

*Courses which must be passed before engineering academic standing can be advanced.
†Part of a planned program of electives to be chosen in consultation with the adviser.

Mechanical Engineering

Sophomore Year

FIRST SEMESTER			S.H.
Chem	1	Gen. Inorg. Chemistry	4
Engrg	57	Statics	3
Math	63	Intermediate Calculus	3
ME	59	Materials and Processes	3
†Humanistic-Social Elective			3
PE		Physical Education	1
			17

SECOND SEMESTER			S.H.
Chem	2	Gen. Inorg. Chemistry	4
Engrg	107	Mechanics of Materials	3
Engrg	109	Materials Laboratory	1
*Math	64	Intemediate Calculus	3
*ME	52	Kinematics, Kinetics	4
†Humanistic-Social Elective			3
PE		Physical Education	1
			19

Junior Year

FIRST SEMESTER			S.H.
Engl	E93	Written and Oral Communication	3
Math	111	Applied Math Analysis 1.	3
ME	101	Thermodynamics	3
ME	105	Dynamics of Liquids.	3
ME	113	M. E. Laboratory	1
ME	141	Machine Design	3
†Humanistic-Social Elective			3
			19

SECOND SEMESTER			S.H.
Econ	51	Prin. of Economics	3
Math	112	Applied Math Analysis II	3
*ME	102	Thermodynamics	3
*ME	106	Heat Transfer	3
ME	114	M. E. Laboratory	1
*ME	142	Machine Design	3
†Humanistic-Social Elective			3
			19

Senior Year

FIRST SEMESTER			S.H.
EE	123	Fundamentals of E. E.	3
EE	125	EE Fundamentals Lab.	1
ME	159	M. E. Laboratory	1
ME	171	Response of Phys. Systems	3
ME	173	Seminar	1
ME Elective			3
†Approved Electives			6
			18

SECOND SEMESTER			S.H.
EE	124	Industrial Elec. Engrg.	3
EE	126	Industrial Elec. Lab.	1
ME	156	Combustion Engines	3
ME	160	M. E. Laboratory	1
ME	162	Power Plants	3
ME	174	Seminar	1
†Approved Electives			6
			18

*Courses which must be passed before engineering academic standing can be advanced.
†The Approved Electives form a planned program of electives to be chosen in consultation with the adviser.

Academic-Professional Courses

The provision whereby a senior may elect the work of the first year in a professional school of the University shall apply solely to eligible students in Trinity College or the Woman's College. The privilege of completing a combined course for the degree is conditioned upon admission to the professional school at the close of the junior year. A student thus admitted registers as a senior in his college and as a first-year student in the professional school.

ACADEMIC-FORESTRY COMBINATION

Pre-professional training in forestry is offered to students of Trinity College who are planning careers in professional forestry. A student who has completed this 3-year program of studies in the liberal arts and sciences outlined below, and who has earned an average grade of C or higher (exclusive of physical education) may, with the approval of the Deans of Trinity College and the School of Forestry, respectively, transfer to the School of Forestry. Upon the satisfactory completion of the forestry course requirements in the Summer Session, and those required in the first year in the School of Forestry (see Bulletin of the School of Forestry) the student will be eligible for the degree Bachelor of Science from Trinity College, Duke University.

The professional degree of Master of Forestry may be earned upon satisfactory completion of the work of the second year in the School of Forestry.

Students wishing information concerning admission to the School of Forestry are invited to consult with the Chairman of the Committee on Admissions of that school.

The program of studies in preparation for admission to the School of Forestry under this combination program includes the following:

UNIFORM COURSE REQUIREMENTS:

	S.H.
Uniform Course Requirements for the B.S. Degree	48–66
Additional Required Courses	24–26
Electives to Make a Total of	94
Summer Field Work	12

These requirements are described in the Requirements for the Bachelor of Science degree in this Bulletin. Spanish may be substituted for French in the foreign language requirement. The natural science requirement is met by completion of Botany 1-2. The economics, history, or political science requirement is met by completion of Economics 51-52. The student who does not present for entrance two acceptable units in history must meet the restricted elective requirement by completion of 6 semester hours in history.

Additional Required Courses:

	S.H.
Chemistry 1-2	8
Engineering Drawing 1-2	4
Geology 51	4
Physics 1-2	8
	24

Electives: The electives are normally chosen from botany, chemistry, economics, mathematics and philosophy. A minimum of 94 semester hours must be obtained, exclusive of summer field work, to

meet uniform course requirements, additional required courses, and electives.

Summer Field Work: This work of 12 weeks, to be taken upon completion of the junior year, includes:

	S.H.
Civil Engineering S110. Plane Surveying	4
Forestry S150. Forest Surveying and Aerial Photo Interpretation	4
Forestry S151. Forest Mensuration	4
	12

Trinity College students in this combination are encouraged to consult with the special adviser for students in the Academic-Forestry Combination. The name of this adviser may be obtained at the School of Forestry office.

ACADEMIC-LAW COMBINATION

A student who has completed with an average grade of C or higher, 96 semester hours of undergraduate work, including the uniform course requirements for the degree of Bachelor of Arts and the work of the junior year in his major and related fields, may, with the approval of the dean of the college, transfer to the Duke University School of Law and be eligible for the degree of Bachelor of Arts from Duke University upon the satisfactory completion therein of the work of the first year.

It is understood that this provision shall apply solely to eligible undergraduates who have completed three years in residence in Duke University, and that not less than the full first-year's work of the Law School will be acceptable for credit towards the bachelor degree.

No single discipline or program of study can be described as the best preparation for the study of law since there are various methods of approach to legal study.

Completion of the undergraduate work necessary to qualify for the Academic-Law Combination does not insure admission to the Duke University School of Law, nor impose any restriction whatever upon its freedom in selecting students for admission. Students wishing further information are invited to consult with the Dean of the School of Law.

Courses of Instruction

Trinity College and the Woman's College

NOTE: Courses primarily for freshmen are numbered from 1 to 49; those primarily for sophomores are numbered from 50 to 99; those primarily for juniors and seniors from 100 to 199; those primarily for seniors and graduates from 200 to 299. The amount of credit for each course is given in semester hours following the description of the course.

The designation (W) or (E) indicates that the course is to be given on the West Campus or on the East Campus. Odd-numbered courses are offered in the fall semester, and even-numbered courses are offered in the spring semester. Double numbers separated by a hyphen indicate that the course is a year-course and must normally be continued throughout the year if credit is received. A student must secure written permission from the instructor in order to receive credit for either semester of a year-course. Double numbers separated by a comma indicate that although the course is a year-course credit may be received for either semester without special permission.

COURSES OPEN PRIMARILY TO FRESHMEN

Air Science 1-2
Art 1-2, 1L-2L
Botany 1, 2
Chemistry 1, 2
Economics 11
Education 1, 5
English 1-2
French 1-2
German 1-2
Greek 1-2, 15
History 1, 2, E1-2
Latin 1-2
Mathematics 11, 21, 22
Music 1-2, 11-12, 47-48
Naval Science 101, 102
Philosophy 48, 49
Physical Education 1, 2
Physics 1-2, 41-42
Political Science 11-12
Religion 1, 2
Russian 1-2
Spanish 1-2
Zoology 1, 2

AESTHETICS, ART, AND MUSIC

PROFESSOR PATRICK, CHAIRMAN; ASSOCIATE PROFESSOR EARL G. MUELLER, DIRECTOR OF UNDERGRADUATE STUDIES IN ART; ASSOCIATE PROFESSOR MARKMAN, SUPERVISOR OF FRESHMAN INSTRUCTION IN ART; ASSOCIATE PROFESSOR JULIA W. MUELLER, DIRECTOR OF UNDERGRADUATE STUDIES IN MUSIC; ASSOCIATE PROFESSOR HANKS, SUPERVISOR OF FRESHMAN INSTRUCTION IN MUSIC; PROFESSOR BONE; ASSOCIATE PROFESSORS BRYAN, HALL, JENKINS, SAVILLE, SUNDERLAND AND WITHERS; ASSISTANT PROFESSORS BRODERSON, HENDRIX AND KLENZ; VISITING LECTURER EARLS; MRS. CUSHMAN, MRS. MCCALL, MR. MAUNEY, MR. STARS, AND MRS. WILKINSON

AESTHETICS

121. THE PRINCIPLES OF ART CRITICISM.—The development of criteria for making sound critical judgments based on analyses of painting, sculpture, architecture, and design. 3 s.h. (E) PROFESSOR PATRICK

FOR SENIORS AND GRADUATES

202. PHILOSOPHY OF ART.—A study of some fundamental issues in aesthetics, with particular reference to the fields of literature, music, and painting. Problems discussed include: the nature and purposes of the arts; meaning in the arts; art and morality; the role of standards in art criticism; aesthetic judgment; interpretation and evaluation. 3 s.h. (E) ASSOCIATE PROFESSOR WELSH

221-222. HISTORY OF AESTHETICS.—Theories of art and beauty in the western world from antiquity to the present. Some attention will be given the developed theories of aesthetics in the Far East. (Formerly 213-214) 6 s.h. (E)
PROFESSOR PATRICK

ART

HISTORY OF ART

1-2. INTRODUCTION TO ART HISTORY.—A historical survey of the development of architecture, sculpture, painting, and the minor arts as material manifestations of the culture of the western world from ancient to modern times, with some reference to primitive, Oriental, and other non-western cultures. The visual arts as a record of a whole civilization. The course will provide the student with terminology and principles necessary to formation of judgments. Open only to freshmen; others, see Art 51-52. 6 s.h. (E & W) STAFF

51-52. INTRODUCTION TO ART HISTORY.—A historical survey of the development of architecture, sculpture, painting, and the minor arts as material manifestations of the culture of the western world from ancient to modern times, with some reference to primitive, Oriental, and other non-western cultures. The visual arts as a record of a whole civilization. The course will provide the student with terminology and principles necessary to formulation of judgments. The aims of this course are identical with those of Art 1-2; the content and method are adapted to the capacities of upperclassmen. Not open to upperclassmen who have received credit for Art 1-2. 6 s.h. (E & W) STAFF

131. ART AND ARCHAEOLOGY OF THE HELLENIC WORLD.—After a preliminary treatment of the archaeological material from the Aegean, the geometric and orientalizing periods, the course deals with the architecture, sculpture and vase painting of ancient Greece from archaic through Hellenistic times. 3 s.h. (W) ASSOCIATE PROFESSOR MARKMAN

132. ROMAN ART AND ARCHAEOLOGY.—The course opens with a treatment of the archaeological background for the formation of the Roman style as derived from Etruscan, Greek and indigenous Italian sources, and then deals with the architecture, sculpture and painting from the early republic to the end of the empire in Italy, and to some extent in the provinces. 3 s.h. (W)
ASSOCIATE PROFESSOR MARKMAN

133. MEDIAEVAL ARCHITECTURE.—A survey of Christian architecture in the Near East, the Balkans, Russia, and western Europe from the beginnings of the mediaeval style in the late classical period to its disintegration in the fifteenth century. (Formerly 101) 3 s.h. (E) ASSOCIATE PROFESSOR SUNDERLAND

134. MEDIAEVAL PAINTING AND SCULPTURE.—A study of painting, including mosaics, manuscripts, stained glass, and sculpture, in western Europe from the late classical period through the fourteenth century. (Formerly 102) 3 s.h. (E) ASSOCIATE PROFESSOR SUNDERLAND

135. RENAISSANCE ARCHITECTURE.—A study of the early phases of the new style based on design elements taken from ancient Rome which replaced the dying Gothic style in Italy in the fifteenth century and in the rest of western Europe in the sixteenth century. 3 s.h. (E) ASSOCIATE PROFESSOR SUNDERLAND

136. NORTHERN RENAISSANCE ART.—A study of book illumination, panel painting, graphic arts, and sculpture as expressions of literary, religious, and philosophical ideas of the fifteenth and sixteenth centuries in the Low Countries, Germany, and France. The formation of the northern realistic tradition in late Gothic Art and the relationship of the North with the Italian Renaissance will be developed in detail. Some emphasis will be placed on indivdual artists such as the

Van Eycks, Van der Weyden, Bouts, Van der Goes, Bosch, Bruegel, Grünewald, and Dürer. (Formerly 125) 3 s.h. (E) ASSOCIATE PROFESSOR E. MUELLER

137. ITALIAN RENAISSANCE PAINTING AND SCULPTURE.—The evolution of art forms in Italy during the fifteenth and sixteenth centuries with emphasis on the art of Florence, Rome, and Venice. (Formerly 123) 3 s.h. (E)
ASSOCIATE PROFESSOR JENKINS

138. EUROPEAN ARCHITECTURE 1550-1750.—A study of the alteration of the High Renaissance ideal by Mannerist and Baroque designers in Italy, and the consequences for the rest of western Europe, especially for absolutist France and parliamentary England. 3 s.h. (E) ASSOCIATE PROFESSOR HALL

139. THE RISE OF CONTEMPORARY ARCHITECTURE.—A study of the sources and evolution of the architecture of today, from the eighteenth century conflict between Romantic Historicism and Industrialism to the work of Gropius, LeCorbusier, Wright, and their successors. (Formerly 105) 3 s.h. (E)
ASSOCIATE PROFESSOR HALI

140. SEVENTEENTH AND EIGHTEENTH CENTURY ART.—A study of the Baroque style in painting and sculpture. Particular emphasis will be given to developments in Spain, France, and the Low Countries. 3 s.h. (E)
ASSOCIATE PROFESSOR JENKINS

141. AMERICAN ART.—A survey of architecture, sculpture, and painting in America from the time of the first settlers to the present day, including a consideration of the contributions of the English, Dutch, French, and Spanish to the artistic heritage of the United States. (Formerly 94) 3 s.h. (E)
ASSOCIATE PROFESSOR SUNDERLAND

142. MODERN PAINTING AND SCULPTURE.—The development of European painting and sculpture from the period of the French Revolution to the present. Introduction to parallel and contemporary trends in the United States. (Formerly 129 and 130) 3 s.h. (E) PROFESSOR PATRICK

143. THE HISTORY OF PRINTS AND DRAWINGS.—A historical and critical study of drawings and prints from the fifteenth century to the present with reference to functions, values, and relationships to other forms such as painting, sculpture, and the book. (Formerly 133) 3 s.h. (E) ASSOCIATE PROFESSOR E. MUELLER

FOR SENIORS AND GRADUATES

215. RELIGIOUS ART OF THE ANCIENT NEAR EAST.—A specialized study of the development of art, particularly architecture and sculpture, as the material expression of religious ideas in Egypt, Mesopotamia, and in part of Syria and Palestine, to the Persian conquest. 3 s.h. (W) ASSOCIATE PROFESSOR MARKMAN

216. RELIGIOUS ART OF THE CLASSICAL WORLD.—A specialized study of the religious art, particularly architecture and sculpture, of Greece and Rome, with special emphasis on the monuments in the Near East. 3 s.h. (W)
ASSOCIATE PROFESSOR MARKMAN

217. AEGEAN ART.—A study of the problems of Aegean art as the forerunner of Greek art and in relation to the contemporary civilization of the eastern Mediterranean world. 3 s.h. (W) ASSOCIATE PROFESSOR MARKMAN

218. EARLY GREEK ART.—A study of the problems of the origin and development of Greek art in the Geometric period to the end of the Archaic. 3 s.h. (W)
ASSOCIATE PROFESSOR MARKMAN

233. EARLY MEDIAEVAL ARCHITECTURE.—The development of religious architecture from the time of Constantine to the end of the First Romanesque style in the third quarter of the eleventh century. 3 s.h. (E)
ASSOCIATE PROFESSOR SUNDERLAND

234. ROMANESQUE SCULPTURE.—The development of sculpture in western Europe from the early Christian period through the culmination of Romanesque art in the west portal of Chartres Cathedral. 3 s.h. (E)
ASSOCIATE PROFESSOR SUNDERLAND

240. ARCHITECTURE OF NORTH AMERICA.—A study illustrating the transplantation of European architectural customs since the sixteenth century; the time-lag in transit and acceptance of later European developments; the gradual assumption of confident independence in design; and the emergence of international leaders in the United States. (Formerly 106) 3 s.h. (E) ASSOCIATE PROFESSOR HALL

DESIGN

Students other than art majors may receive not more than eight semester hours credit for work in studio courses. For any number of semester hours of credit in studio courses an equal number of hours must be taken in History and Criticism. The introductory courses 1L-2L or 51L-52L are prerequisite for all courses in Design.

1L-2L. DESIGN LABORATORY.—This course aims to develop the student's visual faculty through practice with design elements and experience with media. Freshmen intending to elect further courses in Art are advised to carry this course concurrently with Art 1-2. Open only to freshmen enrolled in Art 1-2; others, see Art 51L-52L. 2 s.h. (E)

ASSOCIATE PROFESSOR E. MUELLER; ASSISTANT PROFESSOR BRODERSON

51L-52L. DESIGN LABORATORY.—The aims, content, and method of this course are similar to those of Art 1L-2L. Upperclassmen intending to elect further courses in Art are advised to carry this course concurrently with Art 51-52. Open only to upperclassmen enrolled in Art 51-52, and to those who have completed Art 1-2 or 51-52 without electing Design Laboratory. A senior in his last semester may receive credit for one semester. 2 s.h. (E)

ASSOCIATE PROFESSOR E. MUELLER; ASSISTANT PROFESSOR BRODERSON

53-54. BEGINNING STUDIO.—A studio course offering experiment and practice with formal elements of composition in various media. Particular emphasis will be given to drawing: watercolor, collage, and three-dimensional media will be secondarily considered. 4 s.h. (E)

ASSOCIATE PROFESSOR E. MUELLER; ASSISTANT PROFESSOR BRODERSON

55, 56. PAINTING.—A studio course designed to give experience in painting media with individual and group criticism, and discussion of important historic or contemporary ideas in painting as related to student work. Prerequisite: Art 53-54 or consent of the instructor. 4 s.h. (E)

ASSOCIATE PROFESSOR E. MUELLER; ASSISTANT PROFESSOR BRODERSON

157, 158. ADVANCED PAINTING.—Emphasis is given to the techniques of various painting and design media. Prerequisite: 55, 56. 4 s.h. (E)

ASSOCIATE PROFESSOR E. MUELLER; ASSISTANT PROFESSOR BRODERSON

159, 160. PRINTMAKING.—This course presupposes a knowledge of design and skill in drawing. Practice in wood engraving; block printing; and in copperplate engraving, etching, aquatint, and drypoint. Reference will be made to prints in relation to the design of the book, and historic examples of the art of the print will be analyzed in the study of these techniques. Prerequisite: 53-54. 4 s.h. (E)

ASSOCIATE PROFESSOR E. MUELLER; ASSISTANT PROFESSOR BRODERSON

DEPARTMENTAL MAJOR IN ART

Prerequisite: Introduction to Art History (1-2 or 51-52); or, with the approval of the Director of Undergraduate Studies, equivalent hours in 100 level courses which form a background for the History of Art.

Major Requirements: The student will select in consultation with the departmental adviser a sequence of courses emphasizing either the History of Art or Design.

a. History of Art: 24 semester hours from 100 and 200 level courses distributed over the entire field of Art History, and a concentration of courses in at least two areas.

b. Design: 22 semester hours, of which 16 must be in Design and 6 from courses in the History of Art and Theory.

Related Work: 18 semester hours elected from courses in Aesthetics, Anthropology, English, German, Greek, Latin and Roman Studies, History, History of

Music, History of Religion, Philosophy, Psychology, Romance Languages, and Sociology.

MUSIC

Courses in music are offered both for the general student who wishes to acquire knowledge of music as literature and on a more technical level for those prepared to major in the field. The courses marked * are open to general students without prerequisites.

Theory

*11-12. THEORY I.—The elements of harmony, rhythm, and form; the visual and aural recognition of scales, intervals, triads, and seventh chords, and their functions in relation to the system of tonality; harmonization of melodies; development of rhythmic discrimination. Designed for those students who wish to pursue a more technical study of music. Three lectures and two laboratory hours. Open only to freshmen. 8 s.h. (E) STAFF

*59-60. BASIC MUSICIANSHIP.—A study of the principles involved in the art of musical performance. Rhythms, notation, *tonal organization,* sight reading, ear training. Open to general students. No musical experience or prerequisite required. This credit may not be counted as partial fulfillment of the Literature, Music, Art, Philosophy uniform requirements. Two meetings per week. 2 s.h.

*61-62. THEORY I.—An amplification of Music 11-12. Open to upperclassmen who have not had Music 11-12. 8 s.h. (E) STAFF

73-74. THEORY II.—A continuation of Music 11-12, plus analysis and composition of the smaller forms; further development of proficiency in harmonization; continuation of aural training: introductory study of counterpoint. Prerequisite: Music 11-12 or 61-62. 6 s.h. (E)
ASSOCIATE PROFESSOR BRYAN AND ASSISTANT PROFESSOR KLENZ

117-118. THEORY III.—A continuation of Music 73-74. Emphasis upon development of technical and expressive means and stylistic treatment by practical work in composition, and analysis and observation of larger forms; further study of counterpoint. The completion of an original large form composition for chamber group, chorus, or orchestra. Prerequisites: Music 11-12 or 61-62, and 73-74. 4 s.h. (E)
ASSISTANT PROFESSOR KLENZ

121. CONDUCTING.—The conducting of orchestral and vocal scores. Score-reading and analysis, principles of interpretation, establishment of vocal and instrumental conductoral techniques leading to practical experience in conducting the department musical organizations in rehearsal. Prerequisites: Music 11-12 or 61-62, and 73, or consent of the instructor. 3 s.h. (F) PROFESSOR BONE

122. ORCHESTRATION.—A study of the technical characteristics and transpositions of the instruments of the modern symphony orchestra and concert band. Instrumentation of piano scores or original compositions for string, woodwind, brass ensembles, and for full symphony orchestra or concert band. Prerequisites: Music 11-12 or 61-62, and 73, or consent of the instructor. 3 s.h. (E)
ASSOCIATE PROFESSOR BRYAN

History and Criticism

*1-2. INTRODUCTION TO MUSIC.—Rhythm, melody, harmony, form, instruments of the orchestra, development of listening technique, and critical appreciation. Study of the lives and works of great representative composers from 1700 to the present. Open only to freshmen; others, see Music 51-52. 6 s.h. (E)
PROFESSOR BONE, ASSOCIATE PROFESSORS HANKS AND WITHERS

*51-52. INTRODUCTION TO MUSIC.—Rhythm, melody, harmony, form, instruments of the orchestra, development of listening technique, and critical appreciation. Study of the lives and works of great representative composers from 1700 to the present. The aims of this course are identical with those of Music 1-2; the content and method are adapted to the capacities of upperclassmen. Open only to upperclassmen who have not completed Music 1-2. 6 s.h. (E & W) STAFF

*125. MASTERWORKS OF MUSIC LITERATURE.—An intensive study of selected masterworks which represent the principal currents in modern music history. Compositions by Bach, Mozart, Beethoven, Brahms, Debussy and Bartok will constitute a frame of reference for historical, biographical and stylistic analysis. No prerequisite required. 3 s.h. (E) ASSOCIATE PROFESSOR J. MUELLER

133. ORCHESTRAL LITERATURE.—A study of orchestral suites, overtures, concerti, symphonies, and symphonic poems selected from literature of the eighteenth century to the present. 3 s.h. (E) PROFESSOR BONE

*134. CHORAL LITERATURE.—A study of representative oratorios, cantatas, and masses from Bach to Stravinsky; aesthetic and religious implications of sacred choral composition and performance from the Baroque to the present. 3 s.h. (E) ASSOCIATE PROFESSOR SAVILLE; DR. EARLS

135. PIANO LITERATURE.—A comprehensive survey of the great works for keyboard instruments, from the time of the English virginal composers to the present. Prerequisites: Music 47A, 48A, 97A, and 98A, or consent of the instructor. 3 s.h. (E) ASSOCIATE PROFESSOR WITHERS

136. SOLO SONG LITERATURE.—A study of standard recital repertoire; early Italian and English songs, German lieder, the French and English art song. Open to junior and senior Applied Voice majors. 3 s.h. (E) ASSOCIATE PROFESSOR HANKS

137. CHAMBER MUSIC.—A study of form, style, and interpretation of masterpieces of chamber music. Prerequisites: Music 1-2 or 51-52, or 11-12 or 61-62, or consent of the instructor. 3 s.h. (E) ASSOCIATE PROFESSOR J. MUELLER

138. CONTEMPORARY MUSIC.—A critical survey of contemporary stylistic trends and theory in the light of their twentieth-century background. Prerequisites: Music 1-2 or 51-52, or 11-12 or 61-62, or consent of the instructor. 3 s.h. (E) ASSISTANT PROFESSOR KLENZ

147-148. HISTORY OF MUSIC.—The history of the development of music as a manifestation of Western culture from mediaeval to modern times. The rise of Christianity through the Renaissance, first semester; the Baroque to the present, second semester. Prerequisite: Music 1-2 or 11-12 or 61-62, or consent of the instructor. 6 s.h. (E) ASSOCIATE PROFESSOR SAVILLE; ASSISTANT PROFESSOR KLENZ
Formerly 95-96 and 145-146. 147 not open to students who have had 145-146. 148 not open to students who have had 95-96.

*163. MUSIC IN THE EIGHTEENTH CENTURY.—The development of important instrumental and vocal media and formal concepts through study of the music, the musicians and their environment. 3 s.h. (E) ASSOCIATE PROFESSOR BRYAN

*164. MUSIC IN THE NINETEENTH CENTURY.—A study of the music of the nineteenth century, from Beethoven to Debussy, with attention to artistic and literary influences, and the relations among the creative minds of the time. Individual projects. 3 s.h. (E) ASSOCIATE PROFESSOR J. MUELLER

*165. OPERA LITERATURE.—A study of opera from Handel to Berg; aesthetic and cultural implications of opera from the Baroque to the present. 3 s.h. (E) ASSOCIATE PROFESSOR SAVILLE; DR. EARLS

195-196. COLLEGIUM MUSICUM.—Studies in the integration of music history, theory, and performance. Survey of sources, monuments, and bibliographical techniques. Preparation for performance of representative musical literature through analysis, realization of notations, and stylistic reconstruction. Classroom discussion and reports; also laboratory. Designed for music majors in history or theory and open to others by consent of the instructor. 4 s.h. Laboratory may be taken separately under Applied Music, Medium F. (E) ASSISTANT PROFESSOR KLENZ

MUSIC EDUCATION

57-58. VOCAL DICTION.—Problems of diction as specifically applied to the art of singing. Required of all Applied Voice majors. 2 s.h. (E) ASSOCIATE PROFESSOR HANKS

106. PIANO METHODS AND MATERIALS.—A study of the materials and methods of piano pedagogy. The appropriate choice of essential and supplementary literature. Development of technique, style, and musicianship. Supervised practice teaching. Prerequisites: Music 47A, 48A, 97A, and 98A, or consent of the instructor. 3 s.h. (E) ASSOCIATE PROFESSOR WITHERS

151. PUBLIC SCHOOL MUSIC EDUCATION.—For elementary Education majors. Development of the child through participation in and understanding of music. Child voice and song; rhythmic activity; discriminative listening; music-reading; use of elementary instruments such as auto-harp, psaltery, and the rhythm band instruments. Music as a creative art in its own right and as an adjunct to other studies in the elementary school. 3 s.h. (E)
ASSOCIATE PROFESSOR SAVILLE; MRS. MCCALL

APPLIED MUSIC

The study of Applied Music concerns the understanding of music literature through performance. Instruction is offered in the following media: A. Piano; B. Strings; C. Woodwinds; D. Brass; E. Voice; F. Ensemble—Piano, Instrumental, Vocal, and the Departmental Ensembles listed below; G. Organ. Instruction in media A through E may be private or in classes limited to a minimum of 4 and a maximum of 7 students. Class instruction is restricted to the first 4 grades of proficiency. Class instruction shall be designated by adding the letter X to the appropriate medium and year-in-school classification. (Example: junior year, Woodwinds, class instruction is recorded 147CX.)

Students must register for all Applied Music courses through the Director of Undergraduate Studies in Music. The course numbers listed below refer to the student's class standing and not his musical proficiency.

47A, 48A; 97A, 98A; 147A, 148A; 197A, 198A. PIANO.—For freshmen, sophomores, juniors, seniors. 1 or 2 s.h. (E)
ASSOCIATE PROFESSOR WITHERS; MRS. WILKINSON

47B, 48B; 97B, 98B; 147B, 148B; 197B, 198B. VIOLIN, VIOLA, 'CELLO.—For freshmen, sophomores, juniors, seniors. 1 or 2 s.h. (E)
ASSOCIATE PROFESSOR J. MUELLER; ASSISTANT PROFESSOR KLENZ

47C, 48C; 97C, 98C; 147C, 148C; 197C, 198C. WOODWINDS.—For freshmen, sophomores, juniors, seniors. 1 or 2 s.h. (E) PROFESSOR BONE

47D, 48D; 97D, 98D; 147D, 148D; 197D, 198D. BRASS.—For freshmen, sophomores, juniors, seniors. 1 or 2 s.h. (E) ASSOCIATE PROFESSOR BRYAN

47E, 48E; 97E, 98E; 147E, 148E; 197E, 198E. VOICE.—For freshmen, sophomores, juniors, seniors. 1 or 2 s.h. (E) ASSOCIATE PROFESSOR HANKS; MRS. CUSHMAN

47F, 48F; 97F, 98F; 147F, 148F; 197F, 198F. ENSEMBLE.—For freshmen, sophomores, juniors, seniors. 1 s.h. (E) STAFF

47G, 48G; 97G, 98G; 147G, 148G; 197G, 198G. ORGAN.—For freshmen, sophomores, juniors, seniors. 1 or 2 s.h. (E) ASSISTANT PROFESSOR HENDRIX; MR. MAUNEY

Credits: Credit for instruction in media A, B, C, D, E, and G is granted on the basis of 2 s.h. per semester for *one hour* of private instruction per week and a minimum of six hours practice weekly; or, 1 s.h. per semester for *one-half* hour of private instruction, or one period of class study, and a minimum of six hours practice per week. An additional weekly class meeting for performance and criticism may be required by the instructor without additional credit.

Credit for instruction in medium F is granted on the basis of 1 s.h. per semester for one rehearsal period of instruction and a minimum of three hours practice per week.

No credit in Applied Music will be allowed unless the student satisfactorily completes at some time before graduation six semester hours in Music Theory, Music History, or Music Literature.

Students other than music majors may receive not more than 8 s.h. credit for work in Applied Music. They may elect, after consultation with the Department,

private instruction either on the 1 hour (2 s.h. credit) or the ½ hour (1 s.h. credit) basis.

Music majors must earn a minimum of 6 s.h. and may earn a maximum of 18 s.h. in Applied Music according to the following areas of concentration:

Majors in Music Theory or Music History and criticism must earn a minimum of 6 s.h. credit in Applied Music. (Credit may be reckoned from Grade I.)

Majors in Applied Music must register for one hour of private instruction and may earn a maximum of 18 s.h. credit in Applied Music.

Majors in Music Education who expect to teach music in the public schools should plan their Applied Music programs in consultation with the Director of Undergraduate Studies in Music. The credit hours in Applied Music required for certification in North Carolina may be earned through a program which includes the study of a major medium, a minor medium, and participation in departmental organizations.

Fees: Fees are charged for all Applied Music media excepting F, Ensemble, and for practice facilities. Music majors who pursue the course of study outlined below will pay no fees for Applied Music instruction. Fees are payable to the Treasurer's Office of Duke University at the beginning of each semester as follows:

One ½ hour private lesson per week for one semester	$45.00
Two ½ hour private lessons per week or one 1-hour private lesson per week for one semester	80.00
One 1-hour class lesson per week for one semester	20.00
Three hours' use of cubicle with piano per week for one semester (Theory and Voice Class students)	7.50
Six hours' use of cubicle with piano per week for one semester (Piano and private Voice students)	15.00
Six hours' use of cubicle without piano per week for one semester	10.00
Six hours' use of cubicle with departmental organ per week for one semester	15.00

DEPARTMENTAL MAJOR IN MUSIC

Prerequisite: Music 11-12 or 61-62.

Major Requirements: 24 s.h. including a minimum of 6 s.h. in Applied Music. The major student shall select, in consultation with his departmental adviser, a sequence of Music courses emphasizing (a) theory, or (b) history and criticism, or (c) education, or (d) applied music. The student must participate in one of the Departmental Ensembles or Organizations during each semester of undergraduate study.

DEPARTMENTAL ENSEMBLES

Brass Ensemble
Chamber Orchestra
Collegium Musicum
Madrigal Singers
Piano Ensemble
Vocal Ensemble

DEPARTMENTAL ORGANIZATIONS

Duke University Concert Band
Duke University Symphony Orchestra

AIR SCIENCE

PROFESSOR DUNCAN, LT. COLONEL, USAF, CHAIRMAN; ASSOCIATE PROFESSOR HALSTED, MAJOR, USAF, DIRECTOR OF UNDERGRADUATE STUDIES; INSTRUCTOR POWELL, CAPTAIN, USAF, INSTRUCTOR INNIS, CAPTAIN, USAF

ELIGIBILITY REQUIREMENTS.—All physically qualified freshmen who are citizens of the United States and are enrolled in Trinity College or the College of Engineering are eligible to enroll in the Air Force ROTC. Veterans may be exempted from the freshman and sophomore courses under certain conditions. In special cases where permission has been granted, certain qualified students from the Graduate and Professional Schools may be enrolled.

DEPOSIT REQUIRED.—Each student must make a deposit of twenty dollars with the University Treasurer to insure return of all government property.

AIR FORCE ROTC COURSES.—All students pursue the same generalized courses. Specialized training will be given when the individual enters the Air Force.

The courses are established by the United States Air Force and are approved by the College as electives for all undergraduates. Field or laboratory instruction in leadership, drill, and exercise of command is included as a part of all courses to indoctrinate the student in the fundamental principles of command.

BASIC COURSES

The following courses are required of students in the Air Force Reserve Officers Training Corps, as outlined in the various curricula:

AS 1-2. FIRST YEAR BASIC AIR SCIENCE.—The course introduces the student to the AFROTC Program, the Elements and Potentials of Air Power, Air Vehicles and Principles of Flight, Military Instruments of National Security and Basic Aeronautical Science. The fundamentals of the global concepts of the air age are studied in relation to the historic development of military and civilian aviation. A survey is made of the career opportunities offered by the Air Force. 4 s.h. (w)
CAPTAIN POWELL

AS 51-52. SECOND YEAR BASIC AIR SCIENCE.—Stress is laid upon the Evolution and Elements of Aerial Warfare including targets, weapons, aircraft, air oceans and air bases. The employment of the Air Force, Space Problems and Possibilities in peacetime and during combat operations are analyzed. 4 s.h. (w)
CAPTAIN INNIS

ADVANCED COURSES

All students selected to continue in Air Science pursue:

AS 101-102. FIRST YEAR ADVANCED AIR SCIENCE.—The first semester is concerned with the Air Force Commander and his staff, Techniques of Problem Solving, Communication Processes and Instructing in the Air Force. The second semester deals with the Military Justice System, seminar studies in the Principles of Leadership and Management and Preparation for Summer Training. Prerequisites: AS 1-2 and 51-52 or equivalent. 8 s.h. (w) MAJOR HALSTED

AS 201-202. SECOND YEAR ADVANCED AIR SCIENCE.—The first semester includes the study of International Relations, the Problems of Flight and applied air sciences of Weather and Navigation. The second semester is concerned with the Military Aspects of World Political Geography concluding with a Briefing for Commissioned Service. Prerequisites: AS 1-2, 51-52 and 101-102. 8 s.h. (w)
LT. COLONEL DUNCAN

BIOLOGY

See courses listed under Botany and Zoology.

BOTANY

PROFESSOR OOSTING, CHAIRMAN; ASSOCIATE PROFESSOR JOHNSON, DIRECTOR OF UNDERGRADUATE STUDIES; ASSOCIATE PROFESSOR PHILPOTT, SUPERVISOR OF FRESHMAN INSTRUCTION; PROFESSORS ANDERSON, BILLINGS, HARRAR, HUMM, KRAMER, AND NAYLOR; ASSOCIATE PROFESSOR PERRY; ASSISTANT PROFESSORS CULBERSON AND WILBUR; AND ASSISTANTS

1. GENERAL BOTANY.—An introduction to the structure and life-processes of seed plants and the environmental factors influencing their distribution. Laboratory, discussions, and field trips. Three two-hour periods. 4 s.h. (w & e) STAFF

2. GENERAL BOTANY.—An introduction to reproduction, heredity, and identification with emphasis on flowering plants; and an introduction to the microflora

important in biological communities. Three two-hour periods. Prerequisite: Botany 1. 4 s.h. (W & E) STAFF

51. CULTURE AND PROPAGATION OF PLANTS.—Experimental studies of the processes involved in growth, and the application of this knowledge to the selection, growth, and propagation of plants. Prerequisite: one year of botany. 4 s.h. (E) Not open to pre-Forestry students. ASSISTANT PROFESSOR CULBERSON

52. PLANT IDENTIFICATION.—Practice in the identification of local plants especially flowering plants, and a study of the principles and rules underlying plant classification. Laboratory, lectures, and field trips. Prerequisite: one year of botany. 4 s.h. (W) ASSISTANT PROFESSOR WILBUR

53. ECOLOGY OF ECONOMIC PLANTS.—The principles of plant growth and distribution as applied to crop plants. Forest, grassland, and representative cultivated species will be considered in relation to environment. Prerequisite: one year of a natural science. 3 s.h. (E) Not open to pre-Forestry students.
PROFESSOR OOSTING

55. STRUCTURE OF VASCULAR PLANTS.—A detailed study of the vegetative and reproductive tissues of seed plants; and a survey of the several groups of vascular plants emphasizing relationships of body structures and life histories. Pre requisite: one year of botany. 4 s.h. (E) ASSOCIATE PROFESSOR PHILPOTT

101. PRINCIPLES OF HEREDITY.—The basic principles of heredity and their significance. Lectures, three hours: laboratory, two hours; conference, one hour. Laboratory work includes experimental breeding of the fruit fly. May be taken as a lecture course without laboratory. Prerequisite: one (high-school or college) course in biology, botany, or zoology. High-school algebra or one year of college mathematics recommended. 3 or 4 s.h. (W) ASSOCIATE PROFESSOR PERRY

103. GENERAL BACTERIOLOGY.—A study of the morphology and fundamental physiological processes of bacteria; their relationship to sanitation, public health, soil fertility, and food preservation. Prerequisite: one year of botany or zoology, or equivalent. 4 s.h. (W) ASSOCIATE PROFESSOR JOHNSON

104. THE STRUCTURE AND IDENTIFICATION OF LOWER PLANTS.—A study of representative examples of algae, fungi, mosses and liverworts, including collection, identification, and classification of common forms. Offered in alternate years. Prerequisite: one year of botany. 4 s.h. (W) PROFESSOR ANDERSON

151. INTRODUCTORY PLANT PHYSIOLOGY.—The principal physiological processes of plants, including water relations, synthesis and use of foods, and growth phenomena. Prerequisite: Botany 1, 2 or equivalent; one year of chemistry recommended. 4 s.h. (W) PROFESSOR KRAMER

156. PLANT ECOLOGY.—The principal factors affecting plants and plant communities as they exist in different environments. Laboratory, lectures, and field trips. Prerequisites: Botany 1, 2 and 52, or equivalent. 4 s.h. (E)
PROFESSOR BILLINGS

202. GENETICS.—The principles of heredity, their cytological basis, and their bearing on other fields of biology. Laboratory work involves experimental breeding of the fruit fly and interpretation of data from the breeding of plants. Offered in alternate years. Prerequisites: one year of botany or zoology, or equivalent, and one year of college mathematics. 4 s.h. (W) ASSOCIATE PROFESSOR PERRY

203. PLANT CYTOLOGY.—A study of the structure and organization of plant cells in relation to growth, reproduction and especially heredity. Offered in alternate years. Prerequisite: one year of botany. 4 s.h. (W) PROFESSOR ANDERSON

204. ANATOMY AND MORPHOLOGY OF VASCULAR PLANTS.—A study of vegetative and reproductive tissues of vascular plants including selection and preparation of fresh plant materials. An analysis of some of the significant literature bearing upon function, development, ecology and phylogeny. Prerequisite: Botany 55 or equivalent. 4 s.h. (E) ASSOCIATE PROFESSOR PHILPOTT

216. BOTANICAL MICROTECHNIQUE.—Methods and theory in preparation of plant tissues for temporary mounts and permanent microscopical slides. Prerequisite: Two years of natural science. 4 s.h. (E) ASSOCIATE PROFESSOR PHILPOTT

218. ILLUSTRATIVE TECHNIQUES.—A study of botanical illustrative methods, including theory and use of the microscope, microscopical measurements, drawing, photomicrography, botanical photography, darkroom procedure, lantern slides and the preparation of illustrative material for publication. Prerequisite: Two semesters of botany, zoology or forestry. 2 s.h. (W) PROFESSOR ANDERSON

221. INTRODUCTORY MYCOLOGY.—Field and laboratory study of the vegetative and reproductive structures of the fungi and slime molds. Methods of collection, isolation, propagation, and identification of the major orders as represented in the local flora. Prerequisite: One year of biological science. 4 s.h. (W) ASSOCIATE PROFESSOR JOHNSON

225-226. SPECIAL PROBLEMS.—Students with adequate training may do special work in the following fields:

a. MYCOLOGY, AND PLANT PATHOLOGY. ASSOCIATE PROFESSOR JOHNSON

b. CYTOLOGY. PROFESSOR ANDERSON

c. ECOLOGY. PROFESSORS OOSTING AND BILLINGS

d. GENETICS. ASSOCIATE PROFESSOR PERRY

e. MORPHOLOGY AND ANATOMY OF HIGHER GROUPS. ASSOCIATE PROFESSOR PHILPOTT

f. MORPHOLOGY AND TAXONOMY OF LOWER GROUPS. PROFESSOR ANDERSON, ASSOCIATE PROFESSOR HUMM, ASSISTANT PROFESSOR CULBERSON

g. PHYSIOLOGY. PROFESSORS KRAMER AND NAYLOR

i. TAXONOMY OF HIGHER GROUPS. ASSISTANT PROFESSOR WILBUR

j. SENIOR SEMINAR.—1 s.h. (W) STAFF

m. MICROBIOLOGY. ASSOCIATE PROFESSOR HUMM

252. PLANT METABOLISM.—The physicochemical processes and conditions underlying the physiological processes of plants. Prerequisite: Botany 151 or equivalent; organic chemistry recommended. 3 s.h. (E) PROFESSOR NAYLOR

254. PLANT WATER RELATIONS.—A study of factors affecting the availability of water, its absorption and use in plants, and the effects of water deficits on plant processes. Assigned readings, reports, and lectures. Prerequisite: Botany 151 or equivalent. 3 s.h. (W) PROFESSOR KRAMER

255. TAXONOMY.—A study of the historical background of plant taxonomy, modern concepts and systems of classification, nomenclatorial problems and the taxonomy of specialized groups. Prerequisite: two years of botany, including Botany 52 or equivalent. 4 s.h. (W) ASSISTANT PROFESSOR WILBUR

256. COMMUNITY ANALYSIS AND CLASSIFICATION.—The development of concepts and methods in synecology leading to present applications of theory and field techniques. Prerequisite: Botany 156 or equivalent. 3 s.h. (E) PROFESSOR OOSTING

257. PRINCIPLES OF PLANT DISTRIBUTION.—Interpretations of floristic and ecological plant geography of world vegetation. Prerequisite: Botany 156 or equivalent. 3 s.h. (E) PROFESSOR BILLINGS

258. PHYSIOLOGY OF GROWTH AND DEVELOPMENT.—Consideration of the internal factors and processes leading to the production of new protoplasm and its differentiation at the cellular, tissue, and organ level in plants. Prerequisite: Botany 151 or equivalent; organic chemistry recommended. 3 s.h. (E) PROFESSOR NAYLOR

259. ENVIRONMENTAL MEASUREMENTS.—Methods of obtaining and evaluating climatological data for ecological purposes with special attention to instrumentation and microclimate. Prerequisite: Botany 151 and 156 or equivalent. 3 s.h. (E) PROFESSOR BILLINGS

260. LICHENS.—The morphology, systematics, and biological and ecological implications of the lichens. Collection and identification of specimens and the use of lichen chemistry in taxonomy. Prerequisite: Two semesters of botany. 2 s.h. (w) ASSISTANT PROFESSOR CULBERSON

FOREST BOTANY

223. FOREST PATHOLOGY.—Infectious and non-infectious diseases of forest trees, and related deterioration of forest products. Field and laboratory study of symptoms, etiology, and control. Prerequisite: Botany 1 and 2. 3 s.h. (w) ASSOCIATE PROFESSOR JOHNSON

241. DENDROLOGY.—Nomenclature, classification, and identification of woody plants with special reference to species indigenous to southeastern United States and other important forest regions of temperate North America. Laboratory and field work. Prerequisite: one year of botany. 3 s.h. (w) PROFESSOR HARRAR

DEPARTMENTAL MAJOR

Prerequisites: Botany 1 and 2.

Major Requirements: A minimum of 21 hours (B.S., 24 hours) of work including at least eight hours from each of the two following groups of courses: Group 1—Botany 52, 104 and 156; Group 2—Botany 55, 101, 103, and 151. The remaining hours may be selected from these groups and any other courses in the Department for which the student is eligible, subject to the approval of the Departmental Adviser. All majors are expected to register for Senior Seminar for one semester of their senior year.

Related Work: Courses in at least two Natural Science Departments sufficient to total, with major work, 42 s.h. (B.S., 48 s.h.).

CHEMISTRY

PROFESSOR SAYLOR, CHAIRMAN; ASSOCIATE PROFESSOR WILDER, DIRECTOR OF UNDERGRADUATE STUDIES; PROFESSOR HILL, SUPERVISOR OF FRESHMAN INSTRUCTION; PROFESSORS BIGELOW, BRADSHER, BROWN, GLOCKER (VISITING LECTURER), GROSS, HAUSER, AND HOBBS; ASSOCIATE PROFESSORS KRIGBAUM AND STROBEL; ASSISTANT PROFESSORS POIRIER, QUIN, AND SMITH; DRS. BONK, JOHNSON, AND ASSISTANTS

1, 2. GENERAL INORGANIC CHEMISTRY.—Lectures and recitations on the elementary principles of chemistry and on the structure, properties, preparation and uses of the elements and their compounds. The laboratory work includes qualitative analysis of some of the more common metals. One lecture, two recitations, and three laboratory hours, throughout the year. Chemistry 1 is a prerequisite for Chemistry 2. 8 s.h. (W & E)
PROFESSORS HILL, BRADSHER, AND BROWN; ASSOCIATE PROFESSORS KRIGBAUM, STROBEL AND WILDER; ASSISTANT PROFESSORS POIRIER, QUINN, AND SMITH; DRS. BONK, JOHNSON, AND ASSISTANTS

42. INTRODUCTION TO CHEMICAL ANALYSIS.—A study of solutions of electrolytes with special reference to chemical equilibrium and chemical analysis. Laboratory experiments illustrate the principles of chemical equilibrium and the techniques of quantitative and semimicro qualitative analysis. Credit is not given for both 2 and 42 nor for both 42 and 61. One lecture, one recitation and six laboratory hours. Prerequisites: Permission of the Director of Undergraduate Studies, Chemistry 1, and Mathematics 22; the latter may be taken concurrently 4 s.h. (w) ASSOCIATE PROFESSORS WILDER AND STROBEL

NOTE: Two *mutually exclusive* chemistry sequences are provided on the freshman-sophomore level, (a) courses 1, 2 and 61 and (b) courses 1, 42, and 65. Courses 42 and 65 are open primarily to well-qualified B.S. science majors. Students interested in them should confer with the Director of Undergraduate Studies in Chemistry. Those selected for Chemistry 42 will normally be expected to continue with 65.

61. FUNDAMENTALS OF ANALYTICAL CHEMISTRY.—A study of the reactions of electrolytes in solution and of chemical equilibrium illustrated by labora-

tory experiments involving the techniques of gravimetric, volumetric, and colorimetric analysis. One lecture, one recitation, and six laboratory hours. Prerequisites: Chemistry 1, 2 and Mathematics 22 or equivalent. 4 s.h. (w)

PROFESSOR SAYLOR; ASSOCIATE PROFESSORS KRIGBAUM AND WILDER; ASSISTANT PROFESSORS POIRIER AND SMITH; DRS. BONK, JOHNSON, AND ASSISTANTS

65. INORGANIC CHEMISTRY.—A study of the more familiar elements and their compounds in the light of modern theories of valence and molecular structure. Three recitations. Prerequisite: Chemistry 42. 3 s.h. (w) DR. JOHNSON

70. QUANTITATIVE ANALYSIS.—A study of the theory and techniques of inorganic gravimetric and volumetric analysis. One lecture, one recitation, and six laboratory hours. Prerequisite: Chemistry 42 or 61. 4 s.h. (w)

PROFESSOR SAYLOR; ASSOCIATE PROFESSOR KRIGBAUM; ASSISTANT PROFESSORS POIRIER AND SMITH; DRS. BONK, JOHNSON, AND ASSISTANTS

132. QUANTITATIVE AND INSTRUMENTAL ANALYSIS.—Practice in advanced quantitative analysis and in the use of physical instruments in analysis with special attention to optical devices, together with a discussion of theoretical aspects. One lecture and six laboratory hours. Prerequisites: Chemistry 70 and one year of physics, the latter half of which may be taken concurrently. 3 s.h. (w)

DRS. BONK AND JOHNSON

151, 152. ORGANIC CHEMISTRY.—An introduction to the study of the compounds of carbon in which the chemistry of aliphatic and aromatic compounds is considered. Laboratory experiments are selected to illustrate the more important reactions and preparations of organic compounds. Two lectures, one recitation, and three laboratory hours. Prerequisite: Chemistry 61 or 65. Chemistry 151 is prerequisite for 152. 8 s.h. (w) PROFESSORS BIGELOW, BRADSHER, BROWN, AND HAUSER; ASSOCIATE PROFESSOR WILDER; ASSISTANT PROFESSOR QUIN; AND ASSISTANTS

206. ELEMENTS OF THEORETICAL CHEMISTRY.—A course in the general principles of physical chemistry for students who do not present credit in calculus. Credit is not given for both 206 and 261-262. Three recitation and three laboratory hours. Prerequisites: Chemistry 70, 152, Physics, 8 s.h., and Mathematics, 6 s.h. With the permission of the Director of Graduate Studies, graduate students from other departments may offer other advanced science courses in lieu of some of these prerequisites. 4 s.h. (w)

PROFESSOR SAYLOR AND ASSISTANT PROFESSOR POIRIER

215. ADVANCED INORGANIC CHEMISTRY.—A study of modern theories of valence and molecular structure and of inorganic compounds, particularly the less common types. Prerequisites: Chemistry 261-262 or 206. 3 s.h. (w)

PROFESSOR HILL

216. NUCLEAR CHEMISTRY.—Elementary theory of nuclear reactions, properties of isotopes, and tracer techniques. Two lecturers and three laboratory hours. Prerequisites: Chemistry 70, 152 and Physics 41-42. 3 s.h. (w)

PROFESSOR HILL AND DR. JOHNSON

234. CHEMICAL INSTRUMENTATION.—Discussion of physicochemical principles, as applied to instrumental methods of analysis, illustrated by laboratory experiments with emphasis on methods involving electrical techniques. One lecture and three laboratory hours. Prerequisites: Chemistry 70 and either 261-262 or 206; either of the latter may be taken concurrently. 2 s.h. (w)

ASSOCIATE PROFESSOR STROBEL

251. QUALITATIVE ORGANIC ANALYSIS.—Systematic identification of organic compounds, including a study of solubilities and classification reactions. One lecture and six laboratory hours. With permission of the Director of Graduate Studies, graduate students may take three hours of laboratory work instead of six and receive 2 semester hours credit. Prerequisites: Chemistry 70, 152. 3 s.h. (w)

PROFESSOR HAUSER

252. ADVANCED ORGANIC PREPARATIONS.—A laboratory course designed to supplement the student's knowledge of fundamental organic processes by a selected group of laboratory exercises accompanied by discussions of techniques and theories pertinent to the experiments. Five hours laboratory and lecture with lectures in alternate weeks. Prerequisite: Chemistry 70, 152. 2 s.h., (w)
Professor Brown

261-262. PHYSICAL CHEMISTRY.—Fundamentals of general theoretical chemistry illustrated by selected laboratory experiments. Three recitations and three laboratory hours. Prerequisites: Chemistry 70, 152; Physics, 8 s.h.; and Mathematics 63 or equivalent. 8 s.h. (w) Professor Hobbs and Assistant Professor Smith

271. INTRODUCTION TO RESEARCH.—Lectures on the use of chemical literature, research methods, recording and publication of results, and other topics. One lecture. 1 s.h. (w) Professor Brown

275-276. RESEARCH.—The aim of this course is to give instruction in methods used in the investigation of original problems. It is open to seniors by permission of the Director of Undergraduate Studies. Nine hours a week and conferences. 1 to 6 s.h. (w) Professors Bigelow, Bradsher, Brown, Gross, Hauser, Hill, Hobbs, and Saylor; Associate Professors Krigbaum, Strobel, and Wilder; Assistant Professors Poirier, Quin, and Smith

DEPARTMENTAL MAJOR

A. For the degree of A.B.

Prerequisites: Chemistry 1, 2, Mathematics, 6 s.h.

Major Requirements. 22 s.h., including Chemistry 61, 70, 151, 152, and an additional 6 to 8 s.h., which may be satisfied by 261-262 or 206 together with 2 or 3 s.h. selected from courses 132, 216, 234, 251, and 252.

Related Work: 20 s.h., including Physics, 8 s.h., with the remainder usually in Botany, Geology, Mathematics, Physics or Zoology.

B. For the degree of B.S.

Prerequisites: Chemistry 1, 2 or 1, 42, Mathematics 6 s.h. Major Requirements: Chemistry 61 or 65, 70, 132, 151, 152, 251, 261-262, 216 or 234 or 252; also 271, if 65 is elected.

Related Work: 18 s.h., including Physics, 8 s.h., and Mathematics 63.

The language requirements must be satisfied by German and either French or Russian.

The Department offers work leading to graduation with distinction. Consult the section on Honors and Prizes in this Bulletin.

ECONOMICS AND BUSINESS ADMINISTRATION

PROFESSOR DEVYVER, CHAIRMAN; PROFESSOR LANDON, ACTING DIRECTOR OF UNDERGRADUATE STUDIES; PROFESSORS BLACK, CARTTER, HANNA, HOOVER, HUMPHREY, JOERG, RATCHFORD, SAVILLE, SIMMONS, SMITH, AND SPENGLER; VISITING LECTURER SCHWENNING; ASSOCIATE PROFESSORS DEWEY, DICKENS, AND SHIELDS; VISITING ASSOCIATE PROFESSOR CHIPMAN; ASSISTANT PROFESSORS FERGUSON, KELLER, KREPS, AND YOHE; VISITING ASSISTANT PROFESSORS BLACKBURN, DAVIES, GERHARD, GOODWIN, AND HAHN; INSTRUCTOR MR. FOLSOM; INSTRUCTORS (PART-TIME) MR. GALIFIANAKIS AND MR. STOWERS

The courses offered by the Department are listed under three divisions, Economics, Accounting, and Business Administration.

In general, the Economics courses aim to develop in the student such critical and analytical skills as underlie the ability to understand economic problems and institutions, both in their contemporary and in their historical setting. While no particular vocational or professional goal is emphasized, these courses furnish the academic background necessary for many positions in industry, for work in the

economic branches of government service, and for graduate study in economics and the social sciences.

Courses in Accounting and Business Administration, although more concerned with general principles than with specific applications, stress in greater measure than courses in Economics the knowledge and techniques useful to students definitely preparing for business careers. The student who majors in Accounting may elect courses in accountancy, business law, and related work, sufficient to qualify for admission to C.P.A. examinations.

Economics 51-52 must be passed by all students planning to elect further courses in Economics and Business Administration.

ECONOMICS

51-52. PRINCIPLES OF ECONOMICS.—6 s.h. (E & W) STAFF
Sections of Economics 51 will be offered during the spring semester, and sections of Economics 52 will be offered during the fall semester.

103. TRANSPORTATION.—Essential features, problems, and competitive positions of rail, highway, air, and inland-water transportation, with most emphasis on rail transportation. Special attention is given to the economic significance of transportation, and to cost factors, rates and their economic effects and regulations 3 s.h. (W) PROFESSOR LANDON

132. THE ECONOMIC HISTORY OF THE UNITED STATES.—Development of economic institutions as the United States passed from a wilderness area to an industrial society. Special attention is given to measures of economic change and their application to models of economic growth and fluctuation. 3 s.h. (W)
PROFESSOR SAVILLE; VISITING ASSISTANT PROFESSOR DAVIES

149. INTERMEDIATE ECONOMICS.—This course develops methods of economic analysis beyond the principles level. Major emphasis is laid on the determination of price and distribution of income. These problems are studied in the context of both competitive and monopolistic market structures. 3 s.h. (W) STAFF

152. GLOBAL GEOGRAPHY.—The subject matter involves resources patterns and world affairs, geonomic problems, geocultural problems, and geographic factors affecting geopolitical questions. 3 s.h. (E) PROFESSOR LANDON

153. MONEY, CREDIT AND BANKING.—This course begins with a study of the nature, characteristics, and functions of money, credit, and the commercial banking system. It covers also the history of commercial banking in the United States; the foundation, organization, and functions of the Federal Reserve System; the supervision and control of commercial banks; deposit insurance; and the value of money. 3 s.h. (W)
PROFESSORS SIMMONS AND RATCHFORD; ASSISTANT PROFESSOR YOHE

155. LABOR PROBLEMS.—An examination of present-day labor problems followed by an intensive study of methods used by employers and workers in meeting those problems. 3 s.h. (W) PROFESSOR DEVYVER; ASSISTANT PROFESSOR KREPS; VISITING ASSISTANT PROFESSOR DAVIES

161. EUROPEAN ECONOMIC PROBLEMS.—This course deals with the losses and economic dislocations of the war, the problem of developing a new pattern of intra-European and world trade, the effort to stabilize prices and to establish a Common Market and proposed Free Trade Area. 3 s.h. (W)
PROFESSOR HUMPHREY; VISITING ASSISTANT PROFESSOR GERHARD

169. ECONOMICS OF CONSUMPTION.—Economic problems of the family. Factors determining choice; commercial and legal standards for consumer's goods; consumer credit and co-operation; income and standards of living. 3 s.h. (W)
ASSISTANT PROFESSOR KREPS

186. LATIN AMERICAN ECONOMICS.—A survey of the problems of economic development in twenty countries. 3 s.h. (W) PROFESSOR SMITH

187. PUBLIC FINANCE.—This is a general course in the principles of public finance. It covers the constitutional, economic, and administrative aspects of public

revenues, public expenditures, public debts, and intergovernmental fiscal relations. Special attention is given to current trends and problems. 3 s.h. (w)
PROFESSOR RATCHFORD

189. BUSINESS AND GOVERNMENT.—A survey of the public policies which most directly affect the operation of competition in the business world. The course considers the leading philosophies of public control and economic development, the validity of their presuppositions, and their influence on legislation, court decisions and administrative law. 3 s.h. (w) ASSOCIATE PROFESSOR DEWEY

193. ECONOMIC SYSTEMS.—A study of alternative economic systems. An historical and analytical study of the basic elements of capitalism and of collectivist types of economic systems. Particular attention is given to an analysis of the economic system of Soviet Russia. Prerequisite: permission of the department. 3 s.h. (w) PROFESSOR HOOVER
[Not offered 1960-61]

194. ECONOMIC FUNCTIONS OF THE STATE.—A continuation of Economics 193. A consideration of the economic functions of society and of the constrasting roles of the state in the various economic systems in carrying on these functions. The Nazi system, the quasisocialized economics of Europe, as well as the modifications of old-style capitalism in the United States are analyzed. Prerequisite: Economics 193. 3 s.h. (w) PROFESSOR HOOVER
[Not offered 1960-61]

201. SENIOR SEMINAR IN ECONOMICS.—Problems in theory and applied economics. Readings, reports, and discussion of selected topics. For majors in Economics, with consent of the Department. 3 s.h. (w) STAFF

204. ADVANCED MONEY AND BANKING.—Monetary theory and its statistical and institutional implementation. Particular attention is given to the development of aggregative theories of prices, interest rates and production; the functioning of monetary policy within various theoretical frameworks; and appraisal of the recent use and the limitations of Federal Reserve policy. 3 s.h. (w)
ASSISTANT PROFESSOR YOHE

217. POPULATION PROBLEMS AND RESOURCES.—Survey of population theory and policy. Study of national and international trends in population—growth and resource-use, together with analyses of their economic and social implications. 3 s.h. (w) PROFESSOR SPENGLER

218. BUSINESS CYCLES.—A study of the various types of cyclical movements in industry, with special emphasis on cycle theory and methods of controlling or modifying business cycles. 3 s.h. (w)
PROFESSOR HUMPHREY; VISITING ASSISTANT PROFESSOR GERHARD

219. ECONOMIC PROBLEMS OF UNDER-DEVELOPED AREAS.—Consideration and analysis of the economic and related problems of under-developed countries. Some attention will be given to national and international programs designed to accelerate the solution of these problems. 3 s.h. (w) PROFESSOR SPENGLER

231. ECONOMIC HISTORY OF EUROPE.—The economic development of Europe from medieval times to the present, treating such topics as the guilds, mercantilism, money, banking, crises, the Industrial Revolution, the interrelationships of government and business, and the economic consequences of war. 3 s.h. (w)
PROFESSOR SMITH

233. STATE AND LOCAL FINANCE.—A study of expenditures, taxation, and financial administration in state and local governments with emphasis on current problems. Special attention will be given to research methods and materials and to the financial relations between state and local governments. Prerequisite: Economics 187 or consent of instructor. 3 s.h. (w) PROFESSOR RATCHFORD

237-238. STATISTICAL METHODS.—A study of statistical methods appropriate for dealing with problems in business and social sciences. In addition to developing more thoroughly the subjects considered in *Business Statistics,* the following methods will be considered: simple, multiple, partial, and curvilinear correlation;

curve fitting; probability; sampling distributions; and statistical inference. Prerequisite: Economics 138 or consent of the instructor. Either semester may be taken for credit. 6 s.h. (w) PROFESSOR HANNA

240. NATIONAL INCOME.—A critical survey of the conceptual framework and structure of national income and its components, the reliability of national income estimates, and their use in analyzing questions of economic policy. Prerequisite: Economics 138 or consent of the instructor. 3 s.h. (w)
PROFESSOR HANNA

[Not offered 1960-61]

243. MATHEMATICAL ECONOMICS.—A systematic survey of mathematical economic theory. The principal topics are vector spaces and matrices, macrostatics, especially input-output systems, and microstatics, especially models of the firm employing game theory and activity analysis. 3 s.h. (w)
ASSISTANT PROFESSOR FERGUSON; VISITING ASSOCIATE PROFESSOR CHIPMAN

244. INTRODUCTION TO ECONOMETRICS.—The implementation of economic theory by statistical testing and estimation. The course is composed of lectures on statistical theory for linear systems and of a workshop in applied econometrics. Data processing and programming for digital computor is studied, and the class participates in solution of a problem by use of computor. Prerequisite: Mathematics 221 and the consent of the instructor. 3 s.h. (w)
ASSISTANT PROFESSOR FERGUSON

256. LABOR LEGISLATION AND SOCIAL INSURANCE.—A study of the relations of the state to labor problems with special reference to remedial legislation, to interference in labor disputes, and to social insurance. Prerequisite: Economics 155 or with the consent of the instructor. 3 s.h. (w) PROFESSOR DE VYVER
[Not offered 1960-61]

257. DYNAMICS OF THE LABOR MOVEMENT.—A study of the forces which have shaped the growth of the labor movement. Special emphasis on the origin of modern trade unionism, relating its growth with western philosophic developments, and with the changing economic and social structure of society in Europe and America. 3 s.h. (w) PROFESSOR CARTTER

262. TRADE UNIONISM AND COLLECTIVE BARGAINING.—An intensive survey of the trade union as an economic institution is followed by a study of the principles and problems of union-management relationship as found in collective bargaining. Prerequisite: Economics 155 or equivalent. 3 s.h. (w)
PROFESSOR DE VYVER

265. INTERNATIONAL TRADE AND FINANCE.—A study of the fundamental principles of international trade and foreign exchange. Subjects covered will include international specialization, balance of payments, foreign investments, tariffs and commercial policies, exchange control, exchange rates, and international monetary problems. 3 s.h. (w)
PROFESSOR HUMPHREY; VISITING ASSISTANT PROFESSOR GERHARD

268. COMPETITION AND MONOPOLY.—A detailed study of the varieties of imperfectly competitive markets, the economic and legal issues which they raise, and the policy solutions which have been attempted in the United States. 3 s.h. (w) ASSOCIATE PROFESSOR DEWEY

ACCOUNTING

57-58. PRINCIPLES OF ACCOUNTING.—Principles of single proprietorship, partnership, and corporate accounting. Designed to give the student some insight into accounting techniques and an understanding of financial statements, their preparation and interpretation. Supervised laboratory attendance optional. 6 s.h. (w) STAFF

60. GENERAL ACCOUNTING.—A one semester course in accounting principles designed for economics majors and other non-business administration students who desire some understanding of basic accounting concepts. This course must be taken

in the sophomore or junior year. Students may not receive credit for both Course 60 and Course 57-58. 3 s.h. (w)

PROFESSOR LANDON; ASSOCIATE PROFESSOR DICKENS; VISITING ASSISTANT PROFESSOR BLACKBURN

147. ACCOUNTING FOR CONTROL.—This course traces the ways and means of executive control through statistics and industrial accounting. Emphasis is placed upon controlling business enterprises through cost accounting, financial reports, and other techniques. This course is not open to accounting majors. Prerequisite: Economics 57-58. 3 s.h. (w) PROFESSORS BLACK AND JOERG

171-172. ADVANCED ACCOUNTING.—Advanced accounting theory and practice applied to the managerial problems of valuation and operation in corporations, consolidations, mergers, and liquidations. Open to students who have completed Economics 57-58. 6 s.h. (w)

ASSOCIATE PROFESSOR SHIELDS; ASSISTANT PROFESSER KELLER

173-174. AUDITING, THEORY AND PRACTICE.—This course is primarily concerned with preparing the student to enter public accounting practice, but some attention is given to internal auditing. During the first semester, auditing techniques and methods are studied through the use of an audit practice set. The work of the second semester deals with matters of auditing and accounting policy examined from the standpoints of the supervising accountant, the business manager, and the investor. Prerequisite: Economics 171-172 and the permission of the department. 6 s.h. (w) ASSOCIATE PROFESSOR DICKENS

175-176. C.P.A. REVIEW.—Thorough practice in classroom to prepare candidates for the Certified Public Accountant examination. The object is to train students to apply accounting principles and to work in classroom under substantially the same conditions as in the examination room. Practical accounting problems, auditing analysis and theory of accounts. Prerequisite: Economics 171-172 and permission of the department. 6 s.h. (w) PROFESSOR BLACK

Those who do not wish credit may take Economics 175-176 for $25.00 per semester.

177. INCOME TAX ACCOUNTING.—A study of the accounting principles involved in the management of business enterprise under the requirements of Federal income tax laws. Practice is given in the preparation of tax returns. Prerequisite: Economics 171-172 or permission of the instructor. 3 s.h. (w)

ASSOCIATE PROFESSOR SHIELDS

178. ACCOUNTING SYSTEMS.—A presentation of the design and use of basic accounting procedures as applied to specialized business needs. Field trips to selected business units will be arranged. Prerequisite: Economics 171-172 and the permission of the department. 3 s.h. (w) ASSOCIATE PROFESSOR DICKENS

180. GOVERNMENT ACCOUNTING.—Accounting principles and methods used in the control and administration of governmental units. Emphasis is placed upon state, county, and municipal governments. Prerequisite: Economics 57-58 and permission of the instructor. 3 s.h. (w) ASSOCIATE PROFESSOR SHIELDS

[Not offered 1960-61]

275-276. ADVANCED INDUSTRIAL ACCOUNTING AND MANAGEMENT.—A comprehensive examination of the rationale and techniques of control methods used in industry. Emphasis is laid on a critical evaluation of the practices followed by job-order, process, and standard costing as well as the economics of overhead costs. Prerequisites: Economics 171-172 and permission of the department. 6 s.h. (w) PROFESSOR BLACK

BUSINESS ADMINISTRATION

11. ECONOMIC GEOGRAPHY.—A course in regional economic geography embracing the study of the world's major geographic regions, their present and potential production of food and raw materials for manufacture, and the relationship between these factors and the development of manufacturing industries, cities, and commerce. Offered both semesters. 3 s.h. (E & W)

[Not offered 1960-61]

105. INDUSTRIAL MANAGEMENT.—This course deals primarily with the elements and problems of managing the operations of an industrial firm. Topics treated include the functions and responsibilities of management, qualities required in executives, organization, location, the physical plant, materials control, the planning and control of operations, industrial and market research, personnel, budgeting, purchasing, and records and reports. Offered both semesters. 3 s.h. (w)
PROFESSOR LANDON; VISITING ASSISTANT PROFESSOR HAHN; VISITING LECTURER SCHWENNING

109. THE ECONOMIC GEOGRAPHY OF LATIN AMERICA.—This course involves comprehensive study of the resources and people of Mexico, the West Indies, and Central and South America. Special emphasis is placed upon the possibilities and limitations of increases in trade between the United States and the leading Latin-American countries. Prerequisite: Economics 51-52 or permission of the department. 3 s.h. (E)

115. FUNDAMENTALS OF GEOGRAPHY.—A study of geographic influences consisting of location, maps and their interpretation, climate, topography, soils, minerals, bodies of water, plants, animals, and the works of man. This course is required of all students in the Elementary School Teaching program, and is also recommended for those intending to specialize in foreign trade or the diplomatic service. Prerequisite: Economics 51-52 or permission of the department. 3 s.h. (E)
PROFESSOR LANDON; MR. STOWERS

120. ECONOMIC GEOGRAPHY OF THE PACIFIC.—An analysis of the physical influences, natural resources and economic activities of the Orient. Prerequisite: Economics 51-52 or permission of the department. 3 s.h. (E)
PROFESSOR TUTHILL

138. BUSINESS STATISTICS.—A survey of the principal statistical methods and their application to economics and business administration. The course deals with collection of statistical data, construction of statistical tables and charts, and a brief study of the fundamental statistical concepts and techniques. Offered both semesters. 3 s.h. (W) PROFESSOR HANNA; ASSISTANT PROFESSOR FERGUSON
Open to juniors and to sophomores in the second semester. Not open to seniors except with the permission of the Director of Undergraduate Studies.

143. CORPORATION FINANCE.—Principles and problems in the financial organization of corporations; the study of corporate securities, the management of capital, the distribution of earnings; industrial combinations; insolvency and reorganization. Prerequisite: Economics 57-58, Principles of Accounting, or Economics 60, General Accounting. Offered both semesters. 3 s.h. (w)
PROFESSOR JOERG; ASSISTANT PROFESSOR KELLER; VISITING ASSISTANT PROFESSOR HAHN

144. INVESTMENTS.—A study of the investment policies of individuals and institutions; the securities markets; sources of investment information and data; the analysis and interpretation of financial statements. Prerequisites: Economics 57-58 or 60, and 143. 3 s.h. (W) PROFESSOR JOERG; ASSISTANT PROFESSOR KELLER

158. INSURANCE.—Institutions, practices, and theories relating to the transfer of risks. Consideration is given to policy provisions, rate structures, carrier organization, government regulation, and the investment problems. Planning to minimize the effect of risks on individuals, firms, and the economy is emphasized. 3 s.h. (w)
PROFESSOR SAVILLE

168. MARKETING.—The topics covered in this course include the economic importance of markets and the marketing system; marketing functions; organization, and methods, price policies; finance; speculation; market research and planning of marketing activities; co-operative marketing; criticism of marketing and means for improvement; and regulation. 3 s.h. (w)
PROFESSOR LANDON; MR. FOLSOM

181. BUSINESS LAW.—The fundamental principles of law as applied to routine business transactions. The topics presented are: contracts, agency, and negotiable instruments. 3 s.h. (W)
VISITING ASSISTANT PROFESSOR BLACKBURN; MR. GALIFIANAKIS

182. BUSINESS LAW.—A continuation of 181. The topics presented are: partnerships, corporation, sales, personal and real property, mortgages, suretyship, bankruptcy and trade regulation. 3 s.h. (w)
VISITING ASSISTANT PROFESSOR BLACKBURN; MR. GALIFIANAKIS

184. COMMERCIAL LAW FOR ACCOUNTANTS.—A review and summation of commercial law principles as they apply to accounting theory and practice. Emphasis will be placed upon the commercial law sections of the Certified Public Accountant examinations. Students are admitted to the course by permission of the instructor. *For seniors.* 3 s.h. (w) PROFESSOR BLACK

188. PERSONNEL MANAGEMENT.—A study of the fundamental principles and problems of labor management and of collective bargaining under modern industrial conditions and under existing labor legislation. 3 s.h. (w)
PROFESSOR DE VYVER

191. BUSINESS POLICY.—An integrating course where, through analysis of a series of case problems from the top management viewpoint, the student is given practice in arriving at effective courses of action to solve business problems. To complete this course satisfactorily the student will be required to draw upon the institutional knowledge and techniques acquired in the other courses in the department. Prerequisites: Business Administration requirements through the junior year. 3 s.h. (w) STAFF

DEPARTMENTAL MAJORS

1. ECONOMICS

A. *Prerequisites:*

1. Mathematics 21.
2. Economics 51-52.

B. *Number of hours needed:* 24 hours in addition to Economics 51-52.

1. Required courses—Economics 149
   Economics 153
2. Electives—18 semester hours of work in Economics (not Accounting or Business Administration) of which 9 semester hours shall be advanced courses in the Department.

C. *Related Work:*

1. Number of hours needed: 18 hours.
2. Required courses: one of the following—

Economics 57–58	Principles of Accounting
Economics 60	General Accounting
Economics 138	Business Statistics

3. Departments in which related work is usually taken: Mathematics, Psychology, the social sciences, and Business Administration. In special cases courses taken in other departments may be counted as related work with the approval of the department and the dean.

2. ACCOUNTING

The complete program of study listed under the heading Accounting must be completed for the Accounting Major.

3. BUSINESS ADMINISTRATION

The complete program of study listed under the heading Business on page 38 of this *Bulletin* must be completed in the indicated sequence for the Business Administration major.

The Department offers work leading to graduation with distinction. See the section on Honors.

EDUCATION

PROFESSOR CARTWRIGHT, CHAIRMAN; ASSOCIATE PROFESSOR GEHMAN, DIRECTOR OF UNDERGRADUATE STUDIES; PROFESSORS BOLMEIER, CARR, AND HURLBURT; ASSOCIATE PROFESSORS COLVER, PETTY, RUDISILL, STUMPF, AND WEITZ; ASSISTANT PROFESSORS DUNNING, PALACIOS, AND JOHNSON

Courses in the Department of Education are designed for two groups of students: (1) students with teaching experience or others who have definitely chosen teaching as their lifework, and (2) students who desire to study the school as an outstanding social institution.

Students who do not expect to teach but merely desire an understanding of the school as part of a liberal education are advised to elect such courses as 54 and 104 for their introductory work in the Department and then to elect further work in accordance with their special interests. Students who expect to teach in the public schools should plan their courses in accordance with the general regulations set forth under Teaching. *Students who intend to teach in elementary school should confer with Professors Carr or Petty, and students who intend to teach in secondary school should confer with Professors Dunning or Hurlburt. Students should confer with their advisers prior to registration each semester.*

1. ORIENTATION IN STUDY AND STUDY HABITS.—A course for freshmen whose high-school and other records indicate the need for help in working out satisfactory study methods and in adjusting to college life. Note-taking from reading and lectures, time planning, remedial reading, and pertinent principles of the psychology of learning are among the matters considered. *Either semester.* 3 s.h. (W) [Not offered in 1960-61.]

5. DEVELOPMENTAL READING.—A course consisting of study and practice for the improvement of the reading and study skills. Work is provided in such areas as vocabulary, speed of comprehension, critical interpretation, organization of ideas, and versatility of method in reading for different purposes. 3 s.h. (W)

ASSOCIATE PROFESSOR RUDISILL

54. HISTORY OF AMERICAN EDUCATION.—A study of American education from colonial times to the present. The development of schools, their organization, administration, curriculum, and methods as seen in relation to the social forces that have produced our particular type of civilization. 3 s.h. (E)

ASSISTANT PROFESSOR JOHNSON

68. MENTAL HYGIENE.—Development and application of psychological principles of adjustment to personal behavior. Study of factors in the development of personal adjustment as influenced by human relations in the the home, school, and community. Not open to students who have had Psychology 116. 3 s.h. (E)

ASSOCIATE PROFESSOR GEHMAN

101-102. ELEMENTARY EDUCATION: PRINCIPLES AND PRACTICE.—The study of the nature, subject matter, and methods of elementary education. The course is designed to give prospective elementary teachers an understanding of basic principles and practices in the organization of instruction and of subject matter for the primary and grammar grades of the public school. Students may elect primary or grammar-grade work, according to their special interests. The specific problems which arise in the student teachers' experiences are treated in group and individual conferences. Prerequisite: 2.0 average over-all and in the major. 9 s.h. (E)

PROFESSOR CARR; ASSOCIATE PROFESSOR PETTY

NOTE: Education 101-102, 103, and 118 constitute a semester's work during the senior year.

103. ORGANIZATION AND MANAGEMENT OF THE SCHOOL.—An introduction to the problems of school organization and administration which are of particular concern to the classroom teacher. Although federal and state control over education is briefly reviewed, the main consideration is the local school system. Considerable attention is given to the administration of teaching personnel, pupil personnel, and the program of studies. *Either semester.* 3 s.h. (E)

PROFESSORS BOLMEIER AND HURLBURT; ASSOCIATE PROFESSOR STUMPF

See notes following courses 101-102, 215, 216.

104. HISTORY OF EDUCATION IN EUROPEAN CULTURE.—A study of the evolution of educational theory and practice from Greek civilization through 19th-century Europe. Emphasis will be placed upon the educational ideas of outstanding thinkers from Plato to Spencer. 3 s.h. (E) ASSISTANT PROFESSOR JOHNSON

118. EDUCATIONAL PSYCHOLOGY.—A study of psychology of learning; individual and social development; and psychology of adjustment, as related to problems of instruction and the processes of education. Prerequisite: Psychology 91. 3 s.h. (E) ASSOCIATE PROFESSOR GEHMAN; ASSISTANT PROFESSOR PALACIOS

See notes following courses 101-102, 215-216.

142. CHILDREN'S LITERATURE.—Students enrolled will be allowed to specialize in literature of either the primary or the grammar grades. 3 s.h. (E) PROFESSOR CARR; ASSOCIATE PROFESSOR RUDISILL

161. INTEGRATED ART IN THE PUBLIC SCHOOL.—Work in materials and methods as applied in two dimensional art. (Required of all students intending to teach in the elementary school.) 3 s.h. (E) MR. STARS

162. PLASTIC ART IN THE PUBLIC SCHOOL.—Work in basic three dimensional art, giving an understanding of different sculptural media with special emphasis on ceramics. The course is designed for students in elementary and secondary art education, and will provide credit toward the North Carolina Elementary and Secondary Teaching Certificates. 3 s.h. (E) MR. STARS

164. VOCAL MUSIC IN THE PUBLIC SCHOOL.—Materials and methods of teaching vocal music in the junior and senior high schools; emphasis on organization, administration, and performance of school choirs and ensembles; care of the changing voice. 3 s.h. (E) ASSOCIATE PROFESSOR SAVILLE

166. INSTRUMENTAL MUSIC IN THE PUBLIC SCHOOL.—Materials and methods of teaching instrumental music in the junior and senior high schools; emphasis on teaching technics, repertoire, organization, and administration of the instrumental curriculum. 3 s.h. (E) PROFESSOR BONE

201. TEACHING AND SUPERVISION OF ARITHMETIC.—Special attention is given to the number system, the fundamental operations (with whole numbers, fractions, and decimals), percentage, and measurements. Considered also are the meaning theory, methods of teaching, problem solving, evaluation, practice and drill, and selection and gradation of arithmetical contents. This course is designed for teachers and supervisors in the elementary school. 3 s.h. (E) ASSOCIATE PROFESSOR PETTY

203. PRINCIPLES OF SCHOOL ADMINISTRATION.—The fundamental facts and procedures of school administration, an analysis of the problems and policies of the organization and direction of a local school system, and the functions of the various school officials. Prerequisite: six semester hours in education. 3 s.h. (E) PROFESSORS BOLMEIER AND HURLBURT; ASSOCIATE PROFESSOR STUMPF

204. THE SCHOOL AS AN INSTITUTION.—Consideration is given to the place of the school in the American social order, and its adaptation to social, economic, and political changes. Special attention is directed to the responsibility (1) of the school for seeking solutions to the perplexing problems of youth created by a changing society; and (2) of the government for providing greater equality of educational opportunities. 3 s.h. (E) PROFESSOR BOLMEIER

210. INTRODUCTION TO EDUCATIONAL RESEARCH.—The general purpose of this course is to give the student an overview of research, acquaint him with the nature of research processes, and develop within him an understanding of the essential characteristics of good research work. The course is designed to be liberalizing as well as technical. 3 s.h. (E) ASSOCIATE PROFESSOR STUMPF

215. SECONDARY EDUCATION: PRINCIPLES.—Intensive study of principles, curriculum, and methods in secondary education. Accelerated course meeting six hours a week for half a semester. Prerequisite: 2.0 average over-all and in teaching

field or fields. Must be accompanied by Education 216. Either semester. 3 s.h. (E) PROFESSORS CARTWRIGHT AND HURLBURT; ASSISTANT PROFESSOR DUNNING

216. SECONDARY EDUCATION: INTERNSHIP.—Supervised internship in junior or senior high schools. Full-time observation and teaching for half a semester, accompanied by Education 215. Either semester. 6 s.h. (E) PROFESSORS CARTWRIGHT AND HURLBURT; ASSISTANT PROFESSOR DUNNING

Note: Education 215, 216, 103, and 118 constitute a semester's work during the senior year.

217. THE PSYCHOLOGICAL PRINCIPLES OF EDUCATION.—An advanced study of teaching, learning, and the learner. Selected problems guiding the reading of students will be discussed in class. 3 s.h. (E) ASSOCIATE PROFESSORS GEHMAN AND WEITZ

224. TEACHING THE SOCIAL STUDIES IN ELEMENTARY SCHOOLS.—This course treats objectives, curriculum trends, methods, and materials in elementary-school social studies. Topics receiving emphasis include unit-planning, use of textbook, the reading program, the using of community resources, audio-visual materials, dealing with controversial issues, teaching time and place concepts, and evolution. Opportunity is provided for teachers to work on their own school problems in the social studies. 3 s.h. (E) PROFESSOR CARTWRIGHT

225. THE TEACHING OF HISTORY AND THE SOCIAL STUDIES.—Evaluation of the objectives, content, materials and methods in the teaching of history and the social studies. 3 s.h. (E) PROFESSOR CARTWRIGHT

226. TEACHING READING IN THE ELEMENTARY SCHOOL.—A study of the nature of the reading process and of principles, methods and materials for the development of effective reading attitudes and skills as applied both to developmental and remedial programs. Practice is provided with elementary-school children suffering reading retardation, in testing, diagnosis, and daily remedial teaching. 3 s.h. (E) ASSOCIATE PROFESSOR RUDISILL

228. IMPROVEMENT OF INSTRUCTION IN THE SOCIAL STUDIES.—An advanced treatment of curriculum, methods, and materials in the social studies. Individuals will concentrate on subjects and grade levels of their choice. 3 s.h. (E) PROFESSOR CARTWRIGHT

232. SUPERVISION OF INSTRUCTION.—A survey of supervision as a means of improving instructing and adapting the curriculum to the learner and to community needs. 3 s.h. (E) PROFESSOR CARR

234. SECONDARY-SCHOOL ORGANIZATION AND ADMINISTRATION.—This course is designed especially for principals, teachers, and other prospective members of the secondary-school staff. The scope of secondary education is considered to encompass junior high school, regular high school, senior high, and junior college. Special treatment is given to the problems of internal organization and management. 3 s.h. (E) PROFESSOR BOLMEIER

235. THE NATURE, FUNCTION, AND REORGANIZATION OF THE CURRICULUM.—Selected problems guiding the reading of students. 3 s.h. (E) PROFESSORS CARR AND CARTWRIGHT

236. TEACHING READING IN THE SECONDARY SCHOOL.—A study of the nature of the reading process and of principles, methods, and materials for the development of effective reading attitudes and skills as applied both to developmental and remedial programs. Practice is provided with secondary-school children suffering reading retardation, in testing, diagnosis, and daily remedial teaching. For secondary-school teachers of all subjects who wish to improve the reading and study habits of their students. 3 s.h. (E) ASSOCIATE PROFESSOR RUDISILL

237. LITERATURE FOR ADOLESCENTS.—This course offers a critical survey of literature written for, or appropriate for junior and senior high school students. Fiction, non-fiction, biography, poetry, and drama are examined. Both adult and

transition-type literature are considered. Methods of organizing the program in literature are explored. 3 s.h. ASSISTANT PROFESSOR DUNNING

239. METHODS AND PROBLEMS OF TEACHING ENGLISH IN SECONDARY SCHOOLS.—This course will present sound methods of teaching the reading of literature and other forms of writing, language, grammar and composition. Materials will include selections found in widely adopted textbooks, numerous specimen themes for grading, and current books and articles in the field. Several short compositions and a report will be required. 3 s.h. (E)
ASSISTANT PROFESSOR DUNNING AND ASSOCIATE PROFESSOR BOWMAN

240. EDUCATIONAL AND OCCUPATIONAL INFORMATION.—A study of the sources of occupational and educational information: methods of securing and organizing occupational information; methods of providing vocational and educational information to students through career days, college conferences, class activities, and individual counseling; methods of making job analyses and community occupational surveys. 3 s.h. (W) ASSOCIATE PROFESSOR COLVER

241. PRINCIPLES OF GUIDANCE.—An historical survey of the philosophies of guidance; a study of the interrelationships between instruction, administration, and guidance in education. Prerequisite: 6 hours of psychology or educational psychology. 3 s.h. (W) ASSOCIATE PROFESSOR COLVER

243. PERSONALITY DYNAMICS.—A study of personality structure and dynamics with emphasis upon the implications for counseling and instruction. Prerequisite: 6 hours of psychology or educational psychology. 3 s.h. (E)
ASSOCIATE PROFESSOR GEHMAN

246. THE TEACHING OF MATHEMATICS.—This course deals with such topics as aims, curriculum, course and lesson planning, and classroom procedure for teaching secondary-school mathematics. 3 s.h. (E) ASSISTANT PROFESSOR REYNOLDS

253. SCHOOL LAW.—The primary purpose of this course is to familiarize prospective school administrators and teachers with the legal features of school organization and administration. Although some attention is given to constitutional and statutory provisions, the main emphasis is upon court decisions relating to education. Students are expected to select appropriate problems in school law for intensive study. 3 s.h. (E) PROFESSOR BOLMEIER

258. EDUCATIONAL MEASUREMENTS.—A critical study of the principles and techniques involved in measurement in education with opportunity for individual research. Prerequisite: 12 semester hours in the Department, including a course in educational psychology. 3 s.h. (E) ASSOCIATE PROFESSOR WEITZ

266. SCIENCE IN THE ELEMENTARY SCHOOL.—Presentation of basic concepts in natural and physical science through selected readings, the use of simple experiments and demonstrations, construction and use of equipment, and field studies. 3 s.h. (E) ASSISTANT PROFESSOR REYNOLDS

276. THE TEACHING OF HIGH-SCHOOL SCIENCE.—Discussion, lectures and collateral reading, related to such topics as aims, tests, curriculum, classroom and laboratory procedure, field trips, course and lesson planning for secondary-school science. 3 s.h. (E) ASSISTANT PROFESSOR REYNOLDS

290. ADMINISTRATION OF SCHOOL PROPERTY.—Planning and management of the school plant and its equipment to meet instructional, health, and community needs for immediate and long-range purposes. This course is intended for teachers and principals as well as for superintendents. Areas to be treated include site selection; trends in design, lighting, ventilation and heating; custodial service and maintenance; and financing. 3 s.h. (E) ASSOCIATE PROFESSOR STUMPF

DEPARTMENTAL MAJOR

Major Requirements: Number of hours needed: 24 hours in the Department, including 6 hours in senior-graduate courses.

Related Work: Sufficient work in subjects to be taught to meet certification requirements in state in which student intends to teach.

The Department offers work leading to graduation with distinction. See the section on Honors in this *Bulletin*.

MATERIALS AND METHODS COURSES

Certain courses concerned with materials and methods in teaching the various subjects in the public school curriculum are listed in the proper subject matter department. These courses are intended to give credit on teaching certificates and are recommended by the Department of Education for such credit.

SCIENCE EDUCATION MAJOR

Students desiring to teach science in secondary schools should read the description of this program of study listed under the heading Science Education Major.

ENGLISH

PROFESSOR TURNER, CHAIRMAN; ASSISTANT PROFESSOR BUDD, DIRECTOR OF UNDERGRADUATE STUDIES; ASSOCIATE PROFESSOR PATTON, SUPERVISOR OF FRESHMAN INSTRUCTION; PROFESSORS BEVINGTON, BLACKBURN, BOYCE, BRINKLEY, FENTON, FISHER, GOHDES, SANDERS, STEVENSON, AND WARD; ASSOCIATE PROFESSORS BEVINGTON, BOWMAN, BRYANT, HARWELL, REARDON, AND WETHERBY; ASSISTANT PROFESSORS ANDERSON, FERGUSON, HENINGER, JORDAN, MICHALAK, POTEAT, SCHWERMAN, SMITH, AND WILLIAMS; DR. RANDALL; MMES. ANDERSON, KASKE, AND WETHERBY; MISSES HESTER AND PENNINGER; MESSRS. APPLEWHITE, BOATWRIGHT, BURWELL, CANINE, CARRITHERS, CHARD, CLUGSTON, COMBS, DORRIS, GARRISON, HALLORAN, HARGREAVES, HOOK, HOYLE, HURLEY, KOPPENHAVER, LOGAN, MCCELVEY, MOREY, PRICE, QUAINTANCE, SAYRE, SKIPP, SPEAKS, ZIMMERMAN

1-2. FRESHMAN COMPOSITION.—Training in composition through the writing of weekly expository themes. The theme subjects derive from assigned reading drawn from British and American literature of the 20th Century. English 1 takes up the Essay, the Short Story, and the Novel; English 2, the Play and the Poem. The student attends each week (1) a general lecture on the reading for the week; (2) a section meeting, where the instructor and the students as a group discuss problems of composition and literature; and (3) an individual conference in which the instructor reads and grades the weekly theme and makes special assignments according to the needs of the student.

33. WRITING LABORATORY.—A non-credit course in elementary composition which may be elected by students who need it, or may be required of certain students under the conditions stated on page 31, "Deficiencies in Composition." (E)

53. ENGLISH COMPOSITION.—A course in advanced composition and grammar. Emphasis is placed first on the student's mastering the fundamental principles of English grammar and the other essentials of correct writing. 3 s.h. (E)
ASSISTANT PROFESSOR JORDAN

65-66. ENGLISH COMPOSITION.—A foundation course in imaginative writing, both prose and verse. Open to sophomores and in special cases to freshmen. The consent of the instructor is required. 6 s.h. (E) PROFESSOR SANDERS

E93. WRITTEN AND ORAL COMMUNICATION FOR ENGINEERS.—Emphasis will be placed on the writing of business letters, technical reports, and articles for submission to technical journals. Approximately one-third of the course will provide training in the oral presentation of various materials. Prerequisite: English 1 and 2. 3 s.h. (W) ASSOCIATE PROFESSOR HARWELL AND STAFF

101. EXPOSITORY ENGLISH COMPOSITION.—Designed for students interested in expository writing, this is a course in advanced composition. Primarily for juniors and seniors; open also to sophomores approved by the instructor. 3 s.h. (E) ASSISTANT PROFESSOR FERGUSON

103-104. ENGLISH COMPOSITION.—A course in descriptive and narrative writing. Class discussion of students' manuscripts, supplemented by a critical evalua-

tion of a few selected short stories and by individual conferences with the instructor. Open to sophomores, juniors, and seniors. The consent of the instructor should be secured as early as possible in the spring semester. Prerequisite for English 104: English 103. 6 s.h. (E) PROFESSOR BLACKBURN

SPEECH AND DRAMA

51. ESSENTIALS OF PUBLIC SPEAKING.—A basic course in public speaking, designed to give the student the poise and confidence necessary to think and speak freely before an audience. Particular attention is paid to the gathering and organization of speech materials and to oral presentation. Not open to juniors and seniors. 3 s.h. ASSOCIATE PROFESSOR REARDON; ASSISTANT PROFESSORS MICHALAK AND SCHWERMAN

118. PERSUASIVE SPEAKING.—The psychological and sociological techniques used in gaining acceptance of ideas through speech. Study is made of the factors influencing human behavior; audience analysis and motivation; choice, arrangement, and adaptation of material. Extensive practice in persuasive speaking. Prerequisite: English 151 or consent of the instructor. 3 s.h. (W) ASSOCIATE PROFESSOR WETHERBY

119. HISTORY OF THE THEATER.—The origin and development of drama, acting, and stagecraft from ancient Greece to the modern European and American theater. Production problems of representative plays of the various periods will be discussed. Primarily for juniors and seniors; open also to sophomores approved by the instructor. 3 s.h. (E) ASSOCIATE PROFESSOR REARDON

121. STAGECRAFT.—An introductory course on the technical aspects of play production: scenery, lighting, properties, make-up, and costuming. Lectures and laboratory. Laboratory work will be coordinated with the various productions of the Duke Players. Primarily for juniors and seniors; open also to sophomores approved by the instructor. 3 s.h. (E) ASSISTANT PROFESSOR MICHALAK

122. PLAY PRODUCTION.—An introduction to the methods of producing a play; theater organization, play selection, casting, and rehearsal. Lectures and laboratory. Primarily for juniors and seniors; open also to sophomores approved by the instructor. 3 s.h. (E) ASSISTANT PROFESSOR MICHALAK

139. THE SPEAKING VOICE.—The correction of minor functional speech disorders. The speech organs and their function. The International Phonetic Alphabet and its use. Drill in pronunciation, diction, vocal quality. Primarily for sophomores, juniors, and seniors; also open to freshmen with the consent of the instructor. 3 s.h. (W)
ASSOCIATE PROFESSOR WETHERBY AND ASSISTANT PROFESSOR SCHWERMAN
[Offered both semesters]

150. ORAL INTERPRETATION OF LITERATURE.—A study of poetry and certain types of prose, with practice in the technique by which they may be communicated to an audience. 3 s.h. (W) ASSISTANT PROFESSOR SCHWERMAN
[Offered both semesters]

151. ESSENTIALS OF PUBLIC SPEAKING.—A basic course in public speaking for juniors and seniors dealing with the same matters as 51. (Not open for credit to students who have taken 51). 3 s.h. (E & W)
ASSOCIATE PROFESSOR REARDON; ASSISTANT PROFESSORS MICHALAK AND SCHWERMAN

152. ARGUMENTATION.—The principles of argumentation and debating. The techniques of analysis, investigation, evidence, reasoning, brief making, and refutation. Participation in class discussions and debates. Prerequisite: English 151 or consent of the instructor. 3 s.h. (W) ASSOCIATE PROFESSOR WETHERBY
[Offered in the fall semester]

171, 172. RADIO BROADCASTING.—The theory and practice of radio broadcasting. The purpose, preparation, and production of various types of radio programs. There will be experience before a microphone in a studio situation. Laboratory work both semesters. Primarily for juniors and seniors; open also to sophomores approved by the instructor. 6 s.h. (W) ASSOCIATE PROFESSOR WETHERBY

ENGLISH AND AMERICAN LITERATURE AND LANGUAGE

55, 56. REPRESENTATIVE BRITISH WRITERS.—The following works are studied in the first semester: Chaucer's Prologue to *The Canterbury Tales* and at least two tales, Shakespeare's *I Henry IV*, *Hamlet* or *King Lear*, and one other play, John Donne's *Poems* (selections), Milton's *Paradise Lost* (selections) and some of the shorter poems; in the second semester: Pope's *Poems* (selections), Fielding's *Joseph Andrews*, Keats's *Poems and Letters*, Arnold's *Selected Poetry and Prose*, Dickens's *Great Expectations*, Joyce's *Portrait of the Artist as a Young Man*, and Eliot's *The Waste Land and Other Poems*. 6 s.h. (E & W)

PROFESSOR BEVINGTON AND STAFF

57, 58. REPRESENTATIVE AMERICAN WRITERS.—Selections and complete works. The first semester will include Poe, Emerson, Thoreau, Hawthorne, Melville, Whitman, and Dickinson; the second will include Twain, James, Frost or Robinson, Dreiser, O'Neill, Cummings, and Faulkner or Hemingway. 6 s.h. (E & W)

111, 112. EIGHTEENTH-CENTURY LITERATURE.—The writers emphasized in the first term are Pope, Swift, Defoe, Addison, Steele, Fielding; in the second term, Johnson, Gray, Boswell, Goldsmith, Sheridan, the later novelists, and Blake. 6 s.h. (E)

ASSISTANT PROFESSOR FERGUSON

117. MILTON.—Milton's poetry and prose, together with their relation to the period and to other great works of literature. 3 s.h. (E) PROFESSOR BRINKLEY

123, 124. SHAKESPEARE.—In the first semester twelve plays, before 1600; in the second semester about ten plays, after 1600. 6 s.h. (E & W)

ASSOCIATE PROFESSORS BOWMAN AND BRYANT; ASSISTANT PROFESSOR WILLIAMS

125, 126. ENGLISH LITERATURE, 1789-1832.—The course begins with selections from the poetry of the forerunners of Romanticism. The chief emphasis in the first semester is on the work of the older Romantics: Wordsworth, Coleridge, Lamb, and Hazlitt. In the second semester the chief emphasis is on the work of the younger Romantics: Bryon, Shelley, Keats, and DeQuincey. 6 s.h. (W)

ASSOCIATE PROFESSOR PATTON

129. ENGLISH NOVEL.—The history of the novel from Richardson through Hardy, with attention to social contexts and literary techniques. 3 s.h. (E)

ASSISTANT PROFESSOR SMITH

131, 132. ENGLISH LITERATURE, 1832-1900.—A study of the chief English writers of poetry, prose, and drama from Carlyle to Yeats. The major writers studied in the first semester are Carlyle, Tennyson, Browning, Macaulay, Mill, and Newman; in the second semester, Arnold, Ruskin, the Rossettis, Morris, Swinburne, Shaw, and Yeats, with selections from other writers. Collateral reading from novels of the period. 6 s.h. (E) PROFESSORS BEVINGTON, SANDERS, AND STEVENSON

133, 134. TWENTIETH-CENTURY POETRY.—A study of twentieth-century poetry and poetic criticism in England and America. Problems in critical analysis and interpretation. First semester: the emphasis is on sources in nineteenth-century Symbolism and on the poetry of Hopkins, Yeats, Eliot, Pound, and Stevens. Second semester: the emphasis is on the poets and the poetic theories of the last thirty years. 6 s.h. (E) ASSOCIATE PROFESSOR BEVINGTON

137, 138. AMERICAN LITERATURE.—A survey of American literature from colonial times to the present. Selections and complete novels (Hawthorne and Melville in the first semester; Twain, Henry James, and others in the second). Not open for credit to students who have taken 57, 58. 6 s.h. (E & W)

PROFESSOR FENTON; ASSISTANT PROFESSORS ANDERSON AND BUDD

141. CHAUCER.—*The Canterbury Tales* and the minor poems, with attention to their literary and social background. 3 s.h. (W)

143, 144. ENGLISH LITERATURE: ELIZABETHAN AND SEVENTEENTH CENTURY.—A study of the poetry, prose, and drama of the period. First semester: the emphasis in poetry is on Wyatt, Sidney, Spenser, Raleigh, Shakespeare; in prose, on Sidney and on Florio's Montaigne; in drama, on Marlowe.

Second semester: the chief emphasis is on the metaphysical poets—Donne through Vaughan. Prose: Bacon, Burton, Donne, Browne. Drama: Jonson, Webster, Ford. 6 s.h. (E) PROFESSOR BLACKBURN

147. THE LITERARY EXPRESSION OF SCIENTIFIC THOUGHT.—Readings which delineate man's changing concept of nature, with emphasis on both the scientific thought and the literary merit of each text. Representative works of Hesiod, Plato, Aristotle, Lucretius, Descartes, Thomas Browne, Bertrand Russell, and others. Primarily for engineering students and majors in science. 3 s.h. (W) ASSISTANT PROFESSOR HENINGER

153, 154. READINGS IN EUROPEAN LITERATURE.—Significant works in European literature are read in translation and related to similar works in English literature. The first semester includes selected writings of Homer, the Greek dramatists, Plato, Vergil, and Ovid. The second semester comprises works by Dante, More, Cervantes, Molière, Voltaire, Goethe, Dostoevski, Ibsen, and Kafka. 6 s.h. (W) ASSISTANT PROFESSOR HENINGER

155. MODERN EUROPEAN DRAMA.—Continental and Irish plays from Ibsen to Brecht are read in relation to the modern drama of ideas and to the free theater movement. 3 s.h. (E) ASSOCIATE PROFESSOR REARDON

156. MODERN ENGLISH AND AMERICAN DRAMA.—English and American plays from Pinero to Arthur Miller are read and discussed in relation to European origins and to the contemporary scene. 3 s.h. (E) ASSOCIATE PROFESSOR REARDON

158. CONTEMPORARY FICTION.—Intensive reading in selected fiction since 1890, with emphasis on form and technique. Conrad, James, Lawrence, Forster, Kafka, Gide, Joyce, Huxley, and Faulkner. 3 s.h. (E) ASSISTANT PROFESSOR SMITH

165, 166. AMERICAN FICTION.—A survey of the novel and short story. The first semester covers the nineteenth century, from Washington Irving to Henry James; the second covers the twentieth century through ten representative books. 6 s.h. (E) ASSISTANT PROFESSOR BUDD

197-198. SENIOR SEMINAR IN ENGLISH.—A course designed to offer guidance in the analysis and interpretation of English and American literature to students of superior ability. Comparative studies will be encouraged, and considerable reading will be required in critical and aesthetic theory. Emphasis will be placed upon the quality of the final essay. Admission by invitation of the department. 6 s.h. (W) PROFESSOR BEVINGTON

FOR SENIORS AND GRADUATES

203. CHAUCER.—The minor poems, *Troilus,* and *The Canterbury Tales.* 3 s.h. (W) PROFESSOR FISHER

207, 208. HISTORY OF THE ENGLISH LANGUAGE.—A survey of the language from Old to Present English, taking into consideration developments in phonology, morphology, syntax, and vocabulary. 6 s.h. (W) PROFESSOR FISHER

215, 216. ELIZABETHAN DRAMA.—Study of one or two major dramatists (Jonson or Beaumont and Fletcher) and extensive reading in other writers (Heywood, Ford, Massinger, Marlowe, Middleton) with emphasis on the nature and qualities of their work in relation to its historical background. 6 s.h. (W) ASSOCIATE PROFESSOR BRYANT

217. MILTON.—Milton's poetry and prose, with emphasis on the major poems. 3 s.h. (W) PROFESSOR BRINKLEY

218. SPENSER.—The reading of Spenser's works, with chief attention to *The Faerie Queene.* 3 s.h. (W) ASSISTANT PROFESSOR HENINGER

219, 220. THE EIGHTEENTH CENTURY.—Swift, Pope, Defoe, Addison, Steele, and others are studied in the first semester; in the second, Gray, Johnson, Boswell, Collins, Goldsmith, the novelists and other writers. 6 s.h. (W) PROFESSOR BOYCE AND ASSISTANT PROFESSOR FERGUSON

221, 222. ENGLISH LITERATURE OF THE EARLY NINETEENTH CENTURY.—The British Romantic poets and prose writers from Scott to the early Carlyle, with special attention to Wordsworth, Coleridge, and Keats. 6 s.h. (w)
PROFESSORS SANDERS AND STEVENSON

223, 224. ENGLISH LITERATURE OF THE LATER NINETEENTH CENTURY.—The first semester is devoted chiefly to Carlyle, Dickens, Thackeray, Tennyson, and Browning; the second semester to Arnold, Ruskin, Pater, George Eliot, Meredith, the Pre-Raphaelites, and Swinburne. 6 s.h. (w)
PROFESSORS BEVINGTON, SANDERS, AND STEVENSON

229, 230. AMERICAN LITERATURE, 1800-1865.—The writers emphasized in the first semester are Emerson, Thoreau, and Hawthorne; in the second semester, Poe and Melville. 6 s.h. (w) PROFESSOR TURNER AND ASSISTANT PROFESSOR BUDD

233, 234. AMERICAN LITERATURE, 1865-1920.—Selected works of representative authors of the period. The first semester's assignments will include Whitman, Lanier, Mark Twain, James, Howells, Emily Dickinson, Henry Adams, and the Local Colorists; the second semester's, Crane, Norris, Moody, London, Dreiser, Edith Wharton, Willa Cather, O'Neill, Robinson, and Frost. The lectures will deal primarily with literary trends as shaped by the social background. 6 s.h. (w)
PROFESSORS FENTON AND GOHDES

235, 236. AMERICAN LITERATURE SINCE 1920.—The first semester will include Sherwood Anderson, Mencken, Lewis, Lardner, Gertrude Stein, Pound, Eliot, E. E. Cummings, Hemingway, Faulkner, and Fitzgerald; the second semester, Dos Passos, Farrell, Steinbeck, Wolfe, MacLeish, Stephen Vincent Benet, Richard Wright, and more recent writers. 6 s.h. (w) PROFESSOR FENTON

237. ENGLISH DRAMA, 1642-1800.—The heroic play and the comedy of manners of the Restoration; the important plays, serious and comic, of the eighteenth century. 3 s.h. [Not offered in 1960-61.] PROFESSOR WARD

239. SHAKESPEARE.—A study of the plays and poems. 3 s.h. (w)
ASSOCIATE PROFESSOR BRYANT

251, 252. ENGLISH LITERATURE IN THE SEVENTEENTH CENTURY.—A survey of the major works in prose, poetry, and drama from 1600 to the death of Dryden. 6 s.h. (w) PROFESSOR WARD

262. ENGLISH LITERATURE OF THE EARLY TWENTIETH CENTURY.—Representative work of leading writers from 1900 to 1930, in the fields of fiction, drama, poetry, and essay. Critical analysis of selected specimens, and discussion of types, themes, and trends. 3 s.h. (w) ASSISTANT PROFESSOR SMITH

269, 270. SOUTHERN LITERATURE.—The principal authors and the chief literary developments from the beginnings to the present. Emphasis in the first semester is on Byrd, Kennedy, Simms, Poe, Timrod, and the humorists; in the second on Lanier, Harris, Cable, Mark Twain, Ellen Glasgow, and Faulkner. Attention is given to the historical and cultural background and to literary relations extending outside the region. 6 s.h. PROFESSOR TURNER
[Not offered in 1960-61.]

274. AMERICAN HUMOR.—The development of the native tradition in the Down-East humorists and the humorists of the Old Southwest. Extensive reading in Mark Twain and his contemporaries, and some attention to the continuation of the tradition after Mark Twain. 3 s.h. PROFESSOR TURNER
[Not offered in 1960-61.]

DEPARTMENTAL MAJOR

Prerequisite: English 1 and 2.

Major Requirements: English 55-56 and eighteen semester hours, above the sophomore level, in English and American literature including the following:

1. Six hours at the Junior-Senior level (generally to be taken in the Junior year) in one of five designated period courses (143-144, 111-112, 125-126, 131-132, 137-138).

2. Three hours in one of the major authors, Chaucer, Shakespeare, or Milton (141, 203, 123, 124, 239, 117, 217).
3. Six hours (to be taken in the Senior year) in Senior-Graduate courses, numbered at the 200 level. These courses are to be chosen so that surveys of particular periods do not duplicate in subject matter the courses taken in (1) above.
4. The remaining hours must meet the following distribution requirements:
   (a) Three hours of English literature before 1800, unless the requirement is met in (1) or (3) above.
   (b) Three hours of English literature after 1800, unless the requirement is met in (1) or (3) above.
   (c) Three hours of American literature, unless the requirement is met in (1) or (3) above.

Related Work: Eighteen semester hours, which may include appropriate courses in history, aesthetics, art, music, languages, literature in translation, philosophy, or courses in composition, dramatics, and speech. Related work must be taken in at least two departments.

Through the Senior Seminar in English (197-198) the Department offers work leading to Graduation with Distinction in English.

FORESTRY

Students without a Bachelor's degree who are preparing for work in forestry as a profession should take the courses outlined under the Academic-Forestry Combination in the section on Requirements for Degrees. However, with the consent of the instructor in charge, certain forestry courses may be elected by students in other curricula provided they have had adequate preparation (see *Bulletin of the School of Forestry*).

Members of the sophomore, junior, and senior classes, whether or not registered in the Academic-Forestry Combination, may elect the following course:

52. PRINCIPLES OF FORESTRY.—Introduction to forestry in the United States, growth of trees and forests; social and economic problems in developing America's primary renewable natural resource; contribution of forests to the national economy. 2 s.h. (w) MR. WHITE

GEOLOGY

PROFESSOR BERRY, CHAIRMAN AND DIRECTOR OF UNDERGRADUATE STUDIES; ASSISTANT PROFESSORS FURBISH AND HERON

51. GENERAL GEOLOGY.—This course is designed to give a general view of the surface features of the earth, their origin, structure, and materials. Illustrative materials are studied in the laboratory. Excursions are made to neighboring points where the principles of the science are studied in the field. Three one-hour lectures or recitations and one three-hour laboratory. 4 s.h. (E)
ASSISTANT PROFESSORS FURBISH AND HERON

52. GENERAL GEOLOGY.—This course is designed to give some knowledge of the chief events of the earth's history. Excursions will be made to suitable neighboring localities. Three one-hour lectures or recitations and one three-hour laboratory. Prerequisite: Geology 51. 4 s.h. (E)
ASSISTANT PROFESSORS FURBISH AND HERON

55. STRUCTURAL GEOLOGY.—A study of the structural features of the earth's crust. Three one-hour lectures. Prerequisite: Geology 51, 52. 3 s.h. (E)
ASSISTANT PROFESSOR HERON

58. GEOMORPHOLOGY.—A detailed study of the process at work on the land surface and the topographic forms produced by them under different climatic conditions. This course includes practice in the interpretation of topographic maps. Three one-hour lectures or recitations and one three-hour laboratory. 4 s.h. (E)
PROFESSOR BERRY

101-102. MINERALOGY.—This course is devoted to a study of the fundamentals of crystallography and the crystal groups, using crystal models and crystallized minerals. Followed by the systematic study of about 175 important minerals. Determinative work includes exercises on sight recognition, identification by blowpipe, and other physical and chemical tests. Excursions will be made to neighboring mineral localities. Three two-hour periods. Prerequisite: Chemistry 1-2 (can be taken concurrently). 8 s.h. (E) PROFESSOR BERRY

151. ECONOMIC GEOLOGY.—Study of world distribution, geologic occurrence, and uses of important mineral deposits. Three one-hour lectures or recitations and one three-hour laboratory. Prerequisite: Geology 101-102. 4 s.h. (E) PROFESSOR BERRY

152. INTRODUCTORY PALEONTOLOGY.—Systematic study of invertebrate paleontology, dealing mainly with generic characters of the fossil invertebrates and their use in identifying and correlating geologic formations. Three one-hour lectures or recitations and one three-hour laboratory. Prerequisites: Geology 51, 52, and Zoology 2. 4 s.h. (E) PROFESSOR BERRY

164. INTRODUCTION TO GEOLOGIC MAPPING.—An introduction to the fundamental principles and techniques used in geologic mapping, including applicable methods of surveying, the use of aerial photographs, the interpretation of geologic maps, and the solution of problems in geologic relationships. Field excursions will be made when possible. Two hours of lecture and three hours of laboratory each week. Prerequisites: Geology 51, 52, 55, 151. 3 s.h. (E) ASSISTANT PROFESSOR HERON

DEPARTMENTAL MAJOR

Prerequisites: Chemistry 1-2; Zoology 2, Geology 51, 52.

Major Requirements: 1. Number of hours needed, 30 s.h. 2. Required courses, Geology 55, 101-102, 151, 152, 164. 3. Recommended courses, Geology 58.

Related Work: 1. Number of hours needed for A.B., 12 s.h.; for B.S., 18 s.h. 2. Required courses, 1 year Mathematics. 3. Departments in which related work is usually taken, Chemistry, Economics 109, 115, Mathematics, Physics, Sociology 93, Zoology, and Engineering.

GERMANIC LANGUAGES AND LITERATURE

PROFESSOR SALINGER, CHAIRMAN; ASSOCIATE PROFESSOR MAXWELL, DIRECTOR OF UNDERGRADUATE STUDIES; ASSISTANT PROFESSOR SEYMOUR, SUPERVISOR OF FRESHMAN INSTRUCTION; ASSOCIATE PROFESSOR SCHOOLFIELD; ASSISTANT PROFESSOR BEARE; MR. ALLEN AND MR. BRODERSEN

1-2. ELEMENTARY GERMAN.—6 s.h. (E & W) ASSISTANT PROFESSOR SEYMOUR AND STAFF

63-64. INTERMEDIATE GERMAN.—6 s.h. (E & W) ASSOCIATE PROFESSOR MAXWELL AND STAFF

91-92. INTRODUCTION TO GERMAN LITERATURE.—A third year course. Both literary and linguistic factors are combined with practice in the spoken language. 6 s.h. ASSOCIATE PROFESSOR MAXWELL AND ASSISTANT PROFESSOR BEARE

For courses in the 100 and 200 group, which well be offered in 1960-61, please consult list furnished by Dean's office before registration. The only prerequisite for 100 group courses is German 63-64.

107, 108. SCIENTIFIC GERMAN.—The German language as used in the various contemporary sciences. 6 s.h. ASSOCIATE PROFESSOR MAXWELL

109, 110. GERMAN PROSE FICTION.—Origin and development of the German novel and short story with special emphasis on the nineteenth century. 6 s.h. PROFESSOR SALINGER

115, 116. GERMAN DRAMA OF THE NINETEENTH CENTURY.—A study of leading dramatists from Kleist to Hauptmann. 6 s.h.

117, 118. GERMAN CONVERSATION.—A course in writing and speaking German for properly qualified students. 6 s.h.
ASSISTANT PROFESSOR SEYMOUR; MR. ALLEN AND MR. BRODERSEN

125, 126. CONTEMPORARY GERMAN LITERATURE.—A study of representative works of the twentieth century. Kafka will be read first semester; Thomas Mann's selected works will be read second semester. 6 s.h.
ASSOCIATE PROFESSOR MAXWELL

131, 132. INTRODUCTION TO GOETHE.—The reading of his early novels and epics and works pertaining to his life. 6 s.h. ASSOCIATE PROFESSOR MAXWELL

133, 134. THE GERMAN LYRIC.—A survey of the development of German lyric poetry, principally from Klopstock to Rilke (with some attention to mediaeval and early modern poets), seen as poetic reflection of German thought. 6 s.h.
PROFESSOR SALINGER

135. THE NATURE OF LANGUAGE.—Origin and nature of language, methods of descriptive, historical, and comparative linguistics, the linguistic heritage of modern European tongues, world language families. No specific prerequisite. Sophomore standing. Does not count toward fulfillment of language requirement. 3 s.h. ASSISTANT PROFESSOR SEYMOUR

201, 202. GOETHE.—A study of his life and works in the light of his lasting significance to World Literature. 6 s.h. PROFESSOR SALINGER

203, 204. EIGHTEENTH CENTURY.—Eighteenth-century German literature in its relation to contemporary European philosophy. 6 s.h. PROFESSOR SALINGER

205, 206. MIDDLE HIGH GERMAN.—The language and literature of Germany's first classical period. 6 s.h.

207, 208. GERMAN ROMANTICISM.—The course covers the entire field of German romanticism from 1800 to 1850. 6 s.h. ASSOCIATE PROFESSOR SCHOOLFIELD

209, 210. KLEIST, GRILLPARZER, and HEBBEL.—The development of the drama in Germany and Austria between Schiller and Naturalism. 6 s.h.
PROFESSOR SALINGER

211, 212. HEINRICH HEINE AND HIS TIME.—Heine's life and thought, and the contemporary European culture. 6 s.h. PROFESSOR SALINGER

213. LITERATURE OF THE EMPIRES, 1866-1918.—German and Austrian authors of the period with emphasis on Raabe, Fontane, von Saar, Hauptmann, the early works of Thomas and Heinrich Mann, the early Hesse and Rilke. 3 s.h.
ASSOCIATE PROFESSOR SCHOOLFIELD

214. GERMAN LITERATURE SINCE 1918.—Special emphasis on Thomas Mann, Broch, Doderer and the novel since 1920, the drama from Hofmannsthal to Brecht, the poetry of George, the later Rilke and Benn. 3 s.h.
ASSOCIATE PROFESSOR SCHOOLFIELD

215. SEVENTEENTH CENTURY LITERATURE.—A study of the leading writers of the Baroque, seen against the background of their time. 3 s.h.
ASSISTANT PROFESSOR BEARE

COMPARATIVE LITERATURE

201, 202. ROMANTICISM.—Studies in the origin, rise and development of the Romantic Movement in the chief literatures of the Western world. The approach is comparative; the principal emphasis will be on England, France and Germany with some reference to other countries. Selected subjects will be covered in lectures by speakers from various departments of the University. 6 s.h. PROFESSOR SALINGER

203, 204. REALISM AND SYMBOLISM.—Comparative studies in the literatures of England, France, Germany, Russia, the Scandinavian countries, Spain and Italy, tracing the decline of romantic individualism and the reappraisal of man's significance against the social background. Selected subjects will be covered in lectures by speakers from various departments of the University. 6 s.h.
PROFESSOR SALINGER

DEPARTMENTAL MAJOR

1. Prerequisites: German 1-2 and 63-64.

2. Major Requirements: Twenty-four semester hours in the German Department. Twelve of these must be selected from the 200 courses. The remaining twelve may be selected from German 91-92 and any courses in the 100 group. German 107, 108 does not count toward the major. German 117, 118 will be highly recommended to any student majoring in the Department.

3. Related Work: Eighteen semester hours, chosen from the Humanities with the approval of the German Department.

GOVERNMENT

See courses listed under Political Science.

GREEK

PROFESSOR TRUESDALE, CHAIRMAN AND DIRECTOR OF UNDERGRADUATE STUDIES; MR. BROWN

Courses 15, 121, 122, 131, 141, 142, 151 are entirely in English and require no knowledge of the Greek language. The purpose in offering them is to give a wider circle of students some conception of the debt which modern civilization owes to the Greeks.

1-2. COURSE FOR BEGINNERS.—Open to all students. 6 s.h. (W)
PROFESSOR TRUESDALE

15. MYTHOLOGY.—A study of Greek mythology and the use made of it in art and English literature. No knowledge of the Greek language is required. Open to freshmen as an elective in either semester. 3 s.h. (W & E) STAFF

63-64. INTERMEDIATE GREEK.—Intensive review of fundamentals with emphasis on development of comprehensive reading ability. Selections from Herodotus, Xenophon, and Lysias. Open to students who have completed course 1-2. 6 s.h. (W) MR. BROWN

105-106. HOMER.—*Iliad,* Books I-III. PLATO.—*Apology* and *Crito.* Open to students who have completed courses 1-2 and 63-64 or their equivalents. 6 s.h. (W)
PROFESSOR TRUESDALE

107-108. EURIPIDES.—*Medea.* SOPHOCLES.—*Oedipus Tyrannus.* ARISTOPHANES.—*Clouds.* Open to students who have completed the required preliminary work. 6 s.h. (W) STAFF

117-118. GREEK PROSE COMPOSITION.—The character of this course is determined by the needs of the students enrolled. 3 s.h. (W) PROFESSOR TRUESDALE

121, 122. GREEK LITERATURE IN ENGLISH TRANSLATION.—The purpose of this course is to give a general survey of the life and civilization of the Greeks, especially to those who have never studied the language but wish to become acquainted with some of the choicest portions of the literature by the use of translations. It is, however, open as an elective to all juniors and seniors, whether they know Greek or not. First, the *Iliad* and the *Odyssey* are read in translation and illustrated with stereopticon views of the excavations and discoveries at Troy and other cities of the Aegean age; then, many of the extant plays of the three great tragic poets are studied in English translation. 6 s.h. (W & E)
PROFESSOR TRUESDALE AND STAFF

Students may elect course 122, whether they have taken course 121 or not.

131. HISTORY OF GREECE.—The history of the Greek world from the Late Bronze Age to the Macedonian conquest. Open to seniors, juniors, and (by arrangement) sophomores. No knowledge of Greek is required. 3 s.h. (E) MR. BROWN

141, 142. GREEK ART.—(May be treated as two semester-courses.) Open to seniors, juniors, and sophomores. A comprehensive survey of the development of Greek architecture and Greek sculpture in all periods. Course 141 is opened by

a preliminary account of Egyptian, Mesopotamian, and Aegean artistic backgrounds. Course 142 is devoted chiefly to Greek art of the greatest period with the main emphasis on sculpture, and may be elected independently of course 141. All lectures are fully illustrated by slides. No knowledge of Greek is required. 6 s.h. (E) MR. BROWN

151. GREEK ARCHAEOLOGY.—A general treatment of the subject, with emphasis upon the value of archaeological discovery as evidence of the artistic development of the Greek people. The course includes a survey of the various archaeological sites. Open to seniors, juniors, and (by arrangement) sophomores. 3 s.h. (E) MR. BROWN

DEPARTMENTAL MAJOR

Prerequisite: Greek 1-2.

Major Requirements: A candidate for a major in Greek must complete 24 semester hours, including the following courses: Greek 63-64, 105-106, 107-108, 117-118, and 131.

Related Work: Eighteen semester hours selected from at least two other departments subject to the approval of the Greek Department. Appropriate courses are chosen usually in Latin, Philosophy, Art, and English.

Graduates of Duke University may attend the American School of Classical Studies at Athens, Greece, without charge for tuition and are eligible to compete for the fellowships that are offered annually by the School. These consist of two fellowships in Greek archaeology and one in the language, literature, and history of ancient Greece, each with a stipend of $2,000. They are awarded mainly on the basis of examinations held in the beginning of February of each year.

HEALTH AND PHYSICAL EDUCATION

TRINITY COLLEGE AND THE COLLEGE OF ENGINEERING

MR. CAMERON, DIRECTOR; PROFESSOR AYCOCK, DIRECTOR OF UNDERGRADUATE STUDIES AND SUPERVISOR OF FRESHMAN INSTRUCTION; ASSOCIATE PROFESSORS FALCONE, HARRISON, AND PERSONS; ASSISTANT PROFESSORS BLY, COX, MONTFORT; MESSRS. BUBAS, BUEHLER, HAGLER, MASSEY, RISLEY, SKINNER, SHABEL, AND WATERS

REQUIRED PHYSICAL EDUCATION FOR MEN

A student must complete four semesters of physical education in order to fulfill graduation requirements.

All students are given a medical and physical examination before registration. Students who have physical handicaps must register in Corrective Physical Education. Students assigned to these classes will take work suited to their particular needs and capacities.

Students without defects will register in Physical Education 1 and 2 in their freshman year. The activities are selected from the following: apparatus, combative games (fundamentals of basketball, speedball, soccer, volleyball), swimming and tumbling. Swimming is required each semester of the freshman year.

After a student has completed Physical Education 1 and 2, he may complete his physical education requirement by electing and satisfactorily completing two courses from the following individual and team sports: 51. Apparatus-Tumbling; 52. Badminton; 53. Basketball-Handball; 56. Swimming, advanced; 57. Tennis-Volleyball; 58. Golf. A fee of $10.00 for the semester, payable at the Treasurer's Office, is charged for course 58. Golf.

ELECTIVES IN PHYSICAL EDUCATION

The courses listed below are arranged to meet the increasing demand for teachers who are qualified to coach and teach Physical Education. They are open for credit only to students in the High School Teaching Program or to majors in Education. These students may elect 18 semester hours from courses in this group. Six semester hours may be elected from the courses listed under Special Methods in Physical Education, 9 semester hours from the courses listed under Theory and

Practice in Physical Education, and 3 semester hours from Health Education. The courses should be selected with the advice of the Director of Undergraduate Studies in order to meet the needs of the individual.

SPECIAL METHODS IN PHYSICAL EDUCATION

163. ATHLETIC COACHING IN SECONDARY SCHOOLS.—Theory and practice in the fundamentals of coaching baseball and track. Prerequisites: courses 1 and 2. Open to juniors and seniors. Sophomores by permission only. 3 s.h. (w)
MESSRS. CHAMBERS AND PARKER

164. ATHLETIC COACHING IN SECONDARY SCHOOLS.—Theory and practice in the fundamentals of coaching football and basketball. Prerequisites: courses 1 and 2. Open to juniors and seniors. Sophomores by permission only. 3 s.h. (w)
MR. CAMERON AND STAFF

THEORY AND PRACTICE IN PHYSICAL EDUCATION

65. HISTORY AND PRINCIPLES OF PHYSICAL EDUCATION.—A study of the objectives and principles upon which physical education is based. The history of physical education is studied in order to show the changes in objectives, principles, and methods and as an aid in the interpretation of trends. Open to sophomores, juniors, and seniors. 3 s.h. (w) PROFESSOR AYCOCK

172. RECREATIONAL LEADERSHIP.—Combative contests, games, mass athletics, supervision of community recreation. Open to juniors and seniors. Sophomores by permission only. 3 s.h. (w) ASSOCIATE PROFESSOR HARRISON

182. THE ADMINISTRATION OF HEALTH AND PHYSICAL EDUCATION IN SECONDARY SCHOOLS.—Presents the everyday problems that arise in the experience of the teacher of health and physical education. Open to juniors and seniors. 3 s.h. (w) ASSOCIATE PROFESSOR HARRISON

190. PROTECTIVE PRACTICES IN PHYSICAL EDUCATION.—A study of safety measures, including training and first aid. Open to juniors and seniors. 3 s.h. (w) MR. CHAMBERS AND ASSISTANT PROFESSOR MONTFORT

HEALTH EDUCATION

132. SCHOOL HEALTH PROBLEMS.—A course designed (a) to familiarize the teacher with school health problems such as physical screening, communicable disease prevention and control, healthful school environment; (b) to present methods and materials for health teaching in elementary and secondary schools. 3 s.h. (w) PROFESSOR AYCOCK

WOMAN'S COLLEGE

PROFESSOR GROUT, CHAIRMAN; PROFESSOR LEWIS, DIRECTOR OF UNDERGRADUATE STUDIES; ASSISTANT PROFESSOR EDDY, SUPERVISOR OF FRESHMAN INSTRUCTION IN PHYSICAL EDUCATION; ASSOCIATE PROFESSOR UHRHANE, SUPERVISOR OF FRESHMAN INSTRUCTION IN HEALTH EDUCATION; PROFESSOR BOOKHOUT; ASSOCIATE PROFESSOR HOLTON; ASSISTANT PROFESSORS SPANGLER AND WOODYARD; MRS. KISTLER, MISS PROCTOR AND MRS. WRAY

A student must complete four semester hours of physical education in order to fulfill graduation requirements. Ordinarily work must be completed by the end of the sophomore year. Classes meet three times a week or the equivalent thereof.

Each semester is divided into two halves. In general, indoor activities are taught during the two winter half-semesters and outdoor activities in the fall and spring.

Every student must take one course (half-semester) in dance and one in swimming if she is unable to pass the swimming test. The remaining work necessary to complete the requirement may be elected from the activities listed in this section.

All students are given a physical and medical examination upon entering and at any other time when deemed necessary. Classes in individual physical education and light sports are arranged for those who should not take the more active work.

SPECIAL FRESHMAN PHYSICAL EDUCATION

At the beginning of the year, after a series of tests has been given, each freshman is registered for the course she most needs, as determined by the test scores. Such courses as sports fundamentals, fundamentals of rhythm and beginning swimming are offered for those who need to improve their skills in these areas. Students whose test scores are satisfactory will enroll in classes with the sophomores.

For freshmen, the winter half of the first semester consists of a course in fundamental movement twice a week and social hygiene once a week.

PHYSICAL EDUCATION ACTIVITIES

Individual and dual sports: Archery, badminton, bowling, diving, fencing, golf, ice skating, life saving, light sports, riding, stunts and tumbling, swimming, tennis, first aid, instructors' life saving and water safety.
Team sports: Basketball, hockey, "rec" ball, softball, volleyball.
Dance: Ballroom dance, folk dance, modern dance, square dance, tap dance.
Developmental Activities: Individual physical education, fundamental movement, fundamental rhythms, sports fundamentals.

PHYSICAL EDUCATION THEORY

The courses listed in this section are open for credit as follows: P.E. 91, 101, 103, 107, 113, 117, 119, 181-182 and 185 open only to students preparing to teach physical education on a full-time or part-time basis, with the exception of course 107 which is also open for credit to students preparing for social group work and religious education; Physical Education 102 and Health Education 134 required of all students in the Elementary Teaching Program; Physical Education 105-106, 108, 114, and Health Education 131, 134, 140 and 170 open for credit to all undergraduate students, both men and women.

91. FIRST AID AND SAFETY IN PHYSICAL EDUCATION.—A study of measures which must be taken to insure maximum safety in physical education programs. The Standard Red Cross First Aid Course will be included. 2 s.h. (E)
PROFESSOR BOOKHOUT

101. HISTORY AND PRINCIPLES OF PHYSICAL EDUCATION.—An historical survey stressing the relationship between the kind of physical education developed and the social, political and religious ideals of different nations and periods. Principles upon which physical education is based. Analysis of successful teaching. 2 s.h. (E) PROFESSOR GROUT

102. THE TEACHING OF PHYSICAL EDUCATION IN ELEMENTARY SCHOOLS.—A study of methods and materials used in teaching physical education to children; includes discussion on the theory of physical education, and practice in teaching elementary school activities. Required of students in the elementary school teaching program. 3 s.h. (E) PROFESSOR LEWIS

103. GAMES AND RHYTHMS FOR CHILDREN.—Required of students preparing for full-time teaching in physical education. 2 s.h. (E) PROFESSOR LEWIS

105-106. METHODS AND MATERIALS IN RECREATION.—A course intended to familiarize students with recreation activities and methods of organizing groups in these activities. Laboratory work includes practical leadership experience with a recreational club or group in a city organization. General fields covered are: Social Activities, Music Activities, Folk and Square Dancing, Games and Sports, Arts and Crafts, Drama Activities. Open to juniors and seniors without prerequisite. A year course meeting five periods per week throughout the year. Students who have had 102 or 103 may take 106 without 105. 6 s.h. (E)
ASSOCIATE PROFESSOR HOLTON

107. THE TEACHING OF RHYTHMIC ACTIVITIES.—Basic theory and practice in the methods of teaching various types of dance. 2 s.h. (E) MRS. WRAY
[Offered every other year.]

108. PROBLEMS IN COMMUNITY RECREATION.—A study of current trends in organized recreation including programs for community centers, hospitals, in-

dustries and churches, and city recreation; historical development and theories; qualifications and preparation for leadership. 3 s.h. (E)
ASSISTANT PROFESSOR WOODYARD

113. MAMMALIAN ANATOMY.—A study of all organ systems with special emphasis on osteology, arthrology and myology. The cat is used as laboratory animal, but constant application is made to man. Prerequisite: Zoology 1 and 2. 4 s.h. (E) PROFESSOR BOOKHOUT

114. KINESIOLOGY.—A study of muscle function. Analysis of fundamental movements with emphasis on the development of normal posture and efficient body movement. Required of students taking the major in physical education. Prerequisites: Zoology 1 and 2, and P.E. 113 or Zoology 53. 3 s.h. (E)
PROFESSOR BOOKHOUT

117. BODY MECHANICS AND INDIVIDUAL PHYSICAL EDUCATION.—A study of methods of teaching fundamental movement. An analysis of physical conditions for which specialized activity is required. Theory and practice in teaching individual physical education. 3 s.h. (E) PROFESSOR BOOKHOUT

119. ORGANIZATION AND ADMINISTRATION OF PHYSICAL EDUCATION.—Curriculum building in physical education. The administration of class and intramural programs. Administrative problems such as budget, equipment, facilities, interschool athletics, legal aspects, and public relations. 2 s.h. (E)
PROFESSOR GROUT

181-182. METHODS AND MATERIALS IN PHYSICAL EDUCATION.—A course in the theory and practice of teaching and officiating in games and sports. Laboratory hours arranged to provide practice on the field and in the gymnasium. 6 s.h. (E) PROFESSOR LEWIS AND STAFF

185. ADVANCED METHODS AND MATERIALS IN PHYSICAL EDUCATION. —A continuation of 181-182. Required of seniors preparing for full-time teaching in physical education. 2 s.h. (E) PROFESSOR LEWIS AND STAFF

HEALTH EDUCATION

131. HEALTH PROBLEMS IN THE TWENTIETH CENTURY.—Designed to promote a better informed citizenry in regard to major health problems and to encourage individuals to function as intelligent consumers of health products and services. 3 s.h. (E) ASSOCIATE PROFESSOR UHRHANE

134. SCHOOL HEALTH.—Organization and administration of the school health program; basic health problems in schools; methods and materials for teaching health education. Primarily designed for students preparing to teach in elementary and secondary schools and for physical education majors. Either semester. 3 s.h. (E) ASSOCIATE PROFESSOR UHRHANE

140. GEREOLOGY AND HEALTH.—Designed to help the college student understand and appreciate physical and emotional health problems of aging, housing and medical care plans, and the health implications of retirement. 3 s.h. (E)
ASSOCIATE PROFESSOR UHRHANE

170. SPECIAL PROBLEMS IN HEALTH.—A study of health problems related to such things as mass food production, automation and mobility, Civil Defense and disaster control; national and international health programs and problems. 3 s.h. (E) ASSOCIATE PROFESSOR UHRHANE

REQUIREMENTS FOR TEACHING HEALTH AND PHYSICAL EDUCATION IN PUBLIC SCHOOLS

The following requirements have been set up for students in the Teaching Program who wish to qualify as full-time or part-time teachers of Health and Physical Education. These requirements meet the standards of the North Carolina Department of Public Instruction for certification in Health and Physical Education and of most of the other states represented in the student body. Students preparing to teach in any state are advised to consult the department about specific requirements.

Prerequisites: Physical Education 91 and 101. Zoology 1-2.

Major Requirements: 23 s.h. including Physical Education 103, 107, 114, 117, 119, 181-182, 185, and Health Education 134.

Related Work: 17 to 19 s.h. Of these hours 8 must be in anatomy and physiology (P. E. 113, Mammalian Anatomy, and Zoology 151, Principles of Physiology). For the remaining hours, work done in the Department of Education leading to teacher certification is acceptable. Courses in Chemistry, Zoology, Sociology, Psychology, Art and Music are recommended.

DOUBLE TEACHING MAJOR IN BIOLOGY AND PHYSICAL EDUCATION

This is an optional plan for those physical education majors who wish to be certified in a second subject.

Prerequisites: as listed above.

Major Requirements: as listed above.

Related Work: Botany 1 must be taken in addition to the anatomy and physiology courses listed above. The following courses in the Department of Education should be taken: Education 103, 118, 215-216, and 276.

HISTORY

PROFESSOR ALDEN, CHAIRMAN; ASSOCIATE PROFESSOR WATSON, DIRECTOR OF UNDERGRADUATE STUDIES; PROFESSOR ROPP, SUPERVISOR OF FRESHMAN INSTRUCTION; PROFESSORS CLYDE, CURTISS, HAMILTON, LANNING, MANCHESTER, PARKER, AND WOODY; ASSOCIATE PROFESSORS ACOMB, COLTON, FERGUSON, HOLLEY, AND NELSON; ASSISTANT PROFESSORS DURDEN, HOLLYDAY, SCOTT, TISCHENDORF, AND YOUNG; DRS. CRANE AND GILLIN; MESSRS. BERNHARD, LIMOLI, AND SMITH

The undergraduate courses in history are designed to afford (1) an introduction to the study of history by a consideration of the history of the modern world; (2) a more intensive study of general American history; (3) opportunities for more advanced study of phases of American, English, European, Hispanic-American, Russian, and Far Eastern history.

Course 1-2 or 51-52 or E1-2 or an equivalent is a prerequisite for all other courses; course E1-2 is the prescribed course for students in the College of Engineering; courses 91 and 92 are prerequisite for all 100 and 200 courses in United States history. However, seniors with written permission from the instructor may take advanced American history courses without having had 91 and 92. Sophomores who took only one semester of course 1-2 in the freshman year may take courses 91, 92, 95, 96 or 99 concurrently with the second semester, provided they made a grade of B or above on the semester taken. Sophomores must obtain permission of the instructor in order to be admitted to courses numbered above 100; students who are not fully qualified sophomores will not be admitted to these courses. Courses for seniors and graduates are limited to twenty-five students; juniors may not elect them without special permission from the Department and the Executive Committee of the Graduate Faculty.

1, 2. MODERN HISTORY.—This course is an introduction to the study of modern history with special reference to the issues in the modern world. Topics selected for emphasis are: the contest between liberty and authority in the modern state; changing economic organization and theory—capitalism and the challenges to it; the problems of peace and war among the states; the changing faiths men live and die by. Beginning about 1500 with the rise of the European dynastic states, the story is pursued in the first semester to approximately 1848, and in the second through the two great world wars. The central theme in both semesters is the expansion of the influence of Western Europe throughout the world, with some attention to the rise of the United States as a world power. 6 s.h. (W & E)

Sophomores and juniors are not admitted to this course.

PROFESSORS PARKER AND ROPP; ASSOCIATE PROFESSOR FERGUSON; ASSISTANT PROFESSORS SCOTT, HOLLYDAY, TISCHENDORF, AND YOUNG; DRS. CRANE AND GILLIN; MESSRS. BERNHARD AND LIMOLI

E1-2. THE UNITED STATES IN THE WORLD TODAY.—This course is designed for students in the College of Engineering. Topics treated in the first semester are: the rise of national states in Western Europe and other factors attending the discovery and settlement of the New World; the foundation of American institutions; the establishment of the Federal Republic; the frontier, the westward movement, and contemporary international development; the Civil War; the growth of industry and its influence on society; the Spanish-American War and the emergence of the United States as a world power. In the second semester the emphasis is on the growing interdependence of the Western nations in the twentieth century; their influence throughout the world; the participation of the United States in the World Wars and the resultant problems of today. 6 s.h. (W)
MR. BERNHARD AND MR. SMITH

51, 52. MODERN HISTORY.—An introductory course for sophomores, juniors, and seniors dealing with the topics indicated in the description of course 1-2. 6 s.h. (W & E) PROFESSOR CURTISS; ASSOCIATE PROFESSORS ACOMB AND FERGUSON; ASSISTANT PROFESSORS HOLLYDAY, SCOTT, TISCHENDORF, AND YOUNG; DR. CRANE; AND MR. LIMOLI

51X, 52X. MODERN HISTORY.—A special section for seniors who have had no other history at Duke. The topics covered will be essentially the same as those indicated in the description of History 1-2. 6 s.h. (W) PROFESSOR ROPP

91. THE DEVELOPMENT OF AMERICAN DEMOCRACY TO 1865.—This course is a study of trends vital to an understanding of the United States today. The main theme is the development of American democracy. Problems of foreign policy, the growth of capitalism, political practices, social behavior, and conflicting ideals are considered in relation to this main theme. 3 s.h. (W & E)
ASSOCIATE PROFESSORS HOLLEY AND WATSON; ASSISTANT PROFESSOR DURDEN; DR. CRANE; AND MR. SMITH

92. THE DEVELOPMENT OF AMERICAN DEMOCRACY, 1865 TO THE PRESENT.—A continuation of History 91 with emphasis upon the emergence of contemporary problems. 3 s.h. (W & E)
ASSOCIATE PROFESSORS HOLLEY AND WATSON; ASSISTANT PROFESSOR DURDEN; DR. CRANE; AND MR. SMITH

Courses 91 and 92 are intended both to serve as continuation courses in the study of history and to afford the student an opportunity to gain the understanding of the past of the United States essential for intelligent citizenship. These courses are prerequisite for all 100 and 200 courses in United States history, but this prerequisite may be waived for seniors by written permission of the instructor.

95, 96. ANCIENT AND MEDIEVAL HISTORY.—An introductory study of the history of mankind from preliterate man through the development of the characteristic institutions of Western Europe. The first semester considers the prehistoric tribes, the early cultures of Mesopotamia and Egypt, the religious contribution of the Hebrews, and classical Greece and Rome. The second semester deals with Europe in the Middle Ages, from Constantine to Columbus, with emphasis upon institutional and cultural development. 6 s.h. (E) ASSISTANT PROFESSOR YOUNG

99. NAVAL HISTORY AND ELEMENTARY STRATEGY.—After a review of earlier periods, attention is given to the rise of sea-power and its importance in more recent times and to naval actions, especially in the two World Wars. This course is not open to students who have had N.S.101. 3 s.h. (W) PROFESSOR ROPP

105, 106. POLITICAL AND CONSTITUTIONAL HISTORY OF ENGLAND.—The origins and evolution of the principal institutions of the English government, related to their setting in a changing society. 6 s.h. (W) PROFESSOR HAMILTON

107, 108. SOCIAL AND CULTURAL HISTORY OF ENGLAND.—A study of English history from the fourteenth century to the present time in an effort to arrive at a synthesis of social and political events and thus provide a background for the study of English literature. Emphasis is placed on the ages of Chaucer, Shakespeare, and Milton; the eighteenth and early nineteenth centuries; the reign of Victoria and the twentieth century. 6 s.h. (E) ASSOCIATE PROFESSOR FERGUSON

Sophomores who made an average grade of B or above on course 1-2 or E1-2 may be admitted to this course.

113, 114. AMERICA IN THE TWENTIETH CENTURY.—A historical survey of political, economic, and social problems of twentieth-century United States. Emphasis is placed on reform movements from the Muckrakers through the Fair Deal, the emergence of the United States as a world power, and conflicting ideas and ideologies. 6 s.h. (w) ASSOCIATE PROFESSOR WATSON

121, 122. FOREIGN RELATIONS OF THE UNITED STATES, 1775 TO THE PRESENT (first semester to 1898).—With emphasis on social and economic currents as as well as on diplomacy. 6 s.h. (w) MR. SMITH

127. HISTORY OF LATIN AMERICA THROUGH THE FORMATION OF THE NATIONAL GOVERNMENTS.—3 s.h. (w) PROFESSOR LANNING

128. INTER-AMERICAN AFFAIRS.—This course treats the relations of the Latin-American states with each other and with the United States with the design of explaining the current significance of Latin America. Chief emphasis is placed upon social problems and movements common to all the republics and upon the role of the United States in Latin-American affairs, including such topics as American intervention; contributions of the United States to Latin-American life in such matters as public health; Pan-Americanism; Pan-Hispanism; foreign penetration and ideologies; the cultural and commercial aspects of the Good Neighbor Policy; Latin-American states in the World War. 3 s.h. (w) PROFESSOR LANNING

131, 132. THE DEVELOPMENT OF THE MAJOR SOUTH AMERICAN POWERS.—Political, social, and economic history of Argentina, Brazil, and Chile since independence. First semester to 1890; second semester to the present day. 6 s.h. ASSISTANT PROFESSOR TISCHENDORF

135, 136. EUROPE IN THE TWENTIETH CENTURY.—Political and economic developments in Europe since 1900. First semester to 1929; second semester to the present day. 6 s.h. (w) ASSOCIATE PROFESSOR COLTON

137, 138. FOREIGN RELATIONS OF THE EUROPEAN POWERS.—European diplomacy and Europe's position in the world since 1870, with an introductory survey of diplomatic institutions since the Renaissance. 6 s.h. (w) ASSISTANT PROFESSOR SCOTT

139, 140. NINETEENTH-CENTURY EUROPE.—With special attention to Germany and Austria-Hungary, this course will emphasize the development of European nationalism and the clash of freedom and authority. 6 s.h. (w) ASSISTANT PROFESSOR HOLLYDAY

141, 142. CHINA AND JAPAN IN MODERN TIMES.—A history of their response to the West between 1750 and the present, with some attention to their cultural background. 6 s.h. DR. GILLIN

153, 154. THE HISTORY OF THE SOUTH.—A study, beginning in the Colonial period, of the development of the Southern part of the United States with particular attention to its distinctive characteristics and institutions and to their influence in shaping Southern attitudes toward major questions of national policy. 6 s.h. (w) PROFESSOR WOODY

161, 162. RUSSIA FROM IVAN THE TERRIBLE TO PRESENT TIMES.—Topics treated include the rise of the Russian state and its relations with Poland and Turkey; the agrarian problem and the rise of industry; the Russian Revolution; the political, agricultural and industrial policies of the Soviet Union; the role of the U.S.S.R. in World War II; and its postwar policies. 6 s.h. (w) PROFESSOR CURTISS

163, 164. REFORM AND POLITICS IN NINETEENTH CENTURY AMERICA.—First semester: the coming of the Civil War with emphasis on the reform movements of the Jackson era, the anti-slavery crusade and national politics to 1865. Second semester: reform and politics from the Reconstruction era to the Farmers' Revolt of the 1890's. 6 s.h. (w) ASSISTANT PROFESSOR DURDEN

FOR SENIORS AND GRADUATES

Students may receive credit for either semester of a hyphenated course at the 200-level without taking the other semester if they obtain written permission from the instructor and either the Director of Undergraduate or the Director of Graduate Studies.

203-204. THE UNITED STATES, 1850-1900.—The rise of sectionalism, secession, war-time problems of the Union and Confederacy, political and economic adjustments of Reconstruction, the status of the Negro, the New South, problems of capital and labor, the agrarian revolt, political parties and reform, the Spanish-American War. 6 s.h. (W) PROFESSOR WOODY

212. RECENT INTERPRETATIONS OF UNITED STATES HISTORY.—A course designed to encourage a critical evaluation of major issues in United States history through examination of recent interpretations of key problems. 3 s.h. (W) ASSOCIATE PROFESSOR WATSON

213-214. THE OLD SOUTH.—Political thought and party trends from Jefferson to Calhoun; agriculture, slavery, expansion; commerce, manufacturing, transportation; urban life, religion, education; the rise of Southern nationalism. 6 s.h. (W) PROFESSOR WOODY

215-216. THE FOREIGN POLICY AND DIPLOMACY OF THE UNITED STATES.—The work in the first semester, covering the period 1775-1877, deals with such topics as the origin and development of basic foreign policies; isolation from Europe; paramount interests in Latin America, including the Monroe Doctrine; international co-operation in the Far East. The work in the second semester, covering the period since 1877, deals with topics such as the rise of the new "manifest destiny"; beginnings of American imperialism in Latin America and the Far East; the failure of traditional neutrality in the first World War; postwar conflicts between isolation and collective security; involvement in the second World War. 6 s.h. (W) PROFESSOR CLYDE

221-222. THE AGE OF THE RENAISSANCE.—The decline of characteristic features of medieval civilization and the rise of modern European institutions with particular attention to intellectual movements from Dante to Erasmus. 6 s.h. (E) ASSOCIATE PROFESSOR NELSON

223-224. THE OLD REGIME AND THE FRENCH REVOLUTION, 1661-1815.—A study of social, political, and intellectual revolutions in continental Europe, centering on France and giving special attention to successive interpretations of historical change. 6 s.h. ASSOCIATE PROFESSOR ACOMB

225-226. THE AGE OF THE REFORMATION.—A survey of European civilization from 1500 through the Peace of Westphalia. 6 s.h. (E) ASSOCIATE PROFESSOR NELSON

227, 228. EUROPE IN THE NINETEENTH CENTURY.—A study, beginning with the career of Napoleon Bonaparte, of the forces and personalities influential in the nineteenth century. Emphasis in the first semester is on the problems of the biographer; in the second, on those of a student of national communities. 6 s.h. (W) PROFESSOR PARKER

229. RECENT INTERPRETATIONS OF MODERN EUROPEAN HISTORY.—A course designed to develop the ability to appraise critical historical issues through the study and discussion of recent interpretations of key historical problems in modern European history. 3 s.h. PROFESSOR PARKER

231-232. THE HISPANIC COLONIES AND REPUBLICS IN AMERICA.—The development of the Iberian states as colonizing powers, the conquest of America, the Spanish treatment of the Indian, the contest between Spain and other European nations over America, the independence movement, the struggle for stable government, the rise of liberalism with special emphasis upon Mexico from the Revolution of 1910 to the present, and basic inter-American developments. 6 s.h. (W) PROFESSOR LANNING

233-234. THE INSTITUTIONAL, CULTURAL, AND SOCIAL HISTORY OF HISPANIC AMERICA.—The first semester of this course deals with subject races, the development of mixed breeds, the governmental system, the Church and the Inquisition, and Spanish culture with emphasis upon university subjects. In the second semester the work deals with the political ideas of the wars of independence, revolution and dictatorship, the rise of public education, public health, land reform, and proletarian movements. 6 s.h. (w) PROFESSOR LANNING

235, 236. EUROPEAN EXPANSION OVERSEAS (1415-1898).—A course dealing primarily with the processes by which European institutions were carried overseas and modified in a new environment. In the first semester the emphasis is on Portuguese, Dutch, French, and English experience in the Far East and the Americas to 1763. In the second semester, attention is paid to the emergence of independent centers of European culture, as in Brazil, and to the revivals of mercantile imperialism of the new German, French, Italian and British empires of the nineteenth century. 6 s.h. (w) PROFESSOR MANCHESTER

241-242. THE FAR EAST.—The history of the Western impact on Eastern Asia in the nineteenth and twentieth centuries. Emphasis is placed on such matters as commercial and colonial expansion, the opening of China and Japan, the development by the Western Powers and Japan of colonial, imperialistic, and nationalistic interests, and the rise of Communist power in Asia. 6 s.h. (w) PROFESSOR CLYDE

243-244. THE UNITED STATES AND THE FAR EAST.—An historical analysis of American relations with the peoples of Eastern Asia during the nineteenth and twentieth centuries. 6 s.h. (w) PROFESSOR CLYDE

245-246. WAR IN THE MODERN WORLD.—This course is concerned with the relations between warfare and modern political, economic, and social conditions. Special attention is given to the development of British and American military methods and to the events of the American Civil War and the two World Wars. The work in the first semester deals with Clausewitz's theories of warfare and the period from the introduction of gunpowder to 1871; in the second semester there is a more detailed analysis of recent land, sea, and air warfare. 6 s.h. (w) PROFESSOR ROPP

249-250. SOCIAL AND INTELLECTUAL HISTORY OF THE UNITED STATES.—The interplay of ideas and social practice through the examination of attitudes and institutions in such fields as science and technology, law, learning, and religion. 6 s.h. (w) ASSOCIATE PROFESSOR HOLLEY

251-252. RECENT EUROPEAN HISTORY.—A history of political and economic developments in Europe since 1870. 6 s.h. (w) ASSOCIATE PROFESSOR COLTON
Not open to students who have had 135, 136.

259-260. THE EMERGENCE OF THE NEW SOUTH, 1865 TO THE PRESENT.—Reconstruction, industrialization, and agrarian revolt; changing status of the Negro; the South's role in the reform movements headed by Theodore Roosevelt, Woodrow Wilson, and Franklin D. Roosevelt. 6 s.h. ASSISTANT PROFESSOR DURDEN

261-262. RUSSIA IN THE TWENTIETH CENTURY.—A study of the background of the Revolution of 1917 followed by an analysis of the history and policies of the Soviet state. 6 s.h. (w) PROFESSOR CURTISS

263-264. AMERICAN COLONIAL HISTORY AND THE REVOLUTION, 1607-1789.—The founding and institutional development of the English colonies; the background, progress, and results of the Revolution. 6 s.h. (w) PROFESSOR ALDEN

267-268. ENGLAND FROM EDWARD III TO ANNE.—The transition from medieval to modern England, the English Renaissance, and the political, social, and intellectual problems of the seventeenth century. 6 s.h. (w)
Not open to students who have had 107. ASSOCIATE PROFESSOR FERGUSON

269. BRITISH HISTORY FROM 1714 TO 1867.—The interrelationship of the leadership of such men as Walpole, Chatham, Pitt, and Peel with war, revolution,

and social institutions; the rise of the cabinet system; the Industrial Revolution; imperial changes; and reform. 3 s.h. (w) PROFESSOR HAMILTON

270. GREAT BRITAIN AND THE COMMONWEALTH OF NATIONS, 1867 TO THE PRESENT.—A history of Great Britain at the height of her world dominance and beyond, her oceanic empire, and the evolution of that empire into a unique world-wide Commonwealth of Nations. 3 s.h. (w) PROFESSOR HAMILTON

UNDERGRADUATE SEMINARS

Prerequisites: History 1, 2 (or 51, 52) and History 91, 92 (except for History 273-274) and the consent of the instructor.

271-272. SENIOR SEMINAR IN HISTORY.—A course designed to introduce qualified students to advanced methods of historical research and writing and to the appraisal of critical historical issues. Open only to seniors. This course, when taken by a history major, would be in addition to the 6 semester hours required in 200-level courses of the History Department. 6 s.h.
ASSOCIATE PROFESSOR HOLLEY

The following courses are designed to offer opportunities for reading and historical investigation in significant problems. Juniors as well as seniors may apply for admission to these courses, and are urged to do so if they expect to be candidates for graduation with distinction in history or if they expect to practice-teach in their senior year.

273-274. THE BACKGROUND OF MODERN EUROPEAN CIVILIZATION.—Topics in intellectual-cultural history of Europe and adjacent areas from the earliest records to 1648. The work aims to develop critical appreciation and maturity of judgment through using primary sources. 6 s.h. (E)
ASSOCIATE PROFESSOR NELSON

275-276. TWENTIETH-CENTURY EUROPE.—6 s.h. (w)
ASSOCIATE PROFESSOR COLTON
Students may not receive credit for this course and 251-252.

277-278. PROBLEMS IN AMERICAN INTELLECTUAL HISTORY.—6 s.h. (w)
ASSOCIATE PROFESSOR HOLLEY
Students may not receive credit for this course and 249-250.

279-280. THE PROGRESSIVE ERA THROUGH THE NEW DEAL.—6 s.h. (w)
ASSOCIATE PROFESSOR WATSON

DEPARTMENTAL MAJOR

Prerequisites: The Introductory Course in History (1-2 or 51-52).

Major Requirements: Students desiring to take a major in history are required to elect, in addition to History 1-2 or 51-52, 24 semester hours in the Department, including six semester hours in the senior year from courses in the 200 group. Students are urged to take History 91-92; in any case those wishing to take the more advanced courses in American history should elect History 91-92 in the sophomore or junior year.

COURSES APPROVED FOR RELATED WORK IN HISTORY

Aesthetics, Art, and Music: History of Art; History of Music
Economics, but not the courses listed under business administration and accounting except those in economic geography
Education, 54, 104, 225
English and American Literature, but not composition, speech, and drama
German, Greek, Latin, Russian, and the Romance Languages: the literature courses numbered 100 or above that are not primarily conversation or composition courses.
Greek, Latin, except those courses that are primarily grammar or composition
Philosophy, except 48
Political Science
Psychology, 91, 100, 101

Religion, especially those numbered above 100
Sociology

The Department offers work leading to graduation with distinction. See the section on Honors in this *Bulletin*.

LATIN AND ROMAN STUDIES

PROFESSOR ROGERS, CHAIRMAN AND DIRECTOR OF UNDERGRADUATE STUDIES; DR. WOMBLE; MR. CAULFIELD

Students who wish by study in English to make acquaintance with Roman antiquity from either a literary or an historical approach are afforded that opportunity through the courses in translated Latin Literature (111, 112), and Roman History (131, 132).

1-2. COURSE FOR BEGINNERS.—Forms, vocabulary, pronunciation and syntax are emphasized the first semester. They are followed by the reading and translating of Caesar's *Gallic War* the second semester. An effort is made to promote rapid development of ability to read easy Latin with satisfaction. 6 s.h. (W)
MR. CAULFIELD

63. CICERO'S ORATIONS.—Four orations including the *Manilian Law* and *Archias* are read, and attention is paid to prose style. Prerequisite: Latin 1-2, or equivalent. 3 s.h. (E) MR. CAULFIELD

64. VERGIL'S *AENEID*.—Selections from Books I-VI, to the amount of four books or more, will be read and translated, due attention being paid to prosody. 3 s.h. (E) MR. CAULFIELD

91. LATIN PROSE.—Selections from prose authors or Cicero's *De Senectute* and *De Amicitia*, or selected books of Livy's history, with special emphasis on developing competence in reading Latin. 3 s.h. (E) DR. WOMBLE

92. LATIN POETRY.—Selections from the greatest Latin poets, especially Horace's *Odes*. 3 s.h. (E) DR. WOMBLE

97. SIGHT READING IN CLASSICAL LATIN.—One period of an hour per week devoted to practice in the reading of Latin of the classical period; designed to train students to read with facility. 1 s.h. (E) DR. WOMBLE

98. SIGHT READING IN MEDIAEVAL LATIN.—One period of an hour per week devoted to reading interesting mediaeval prose and poetry. Prerequisite: at least one of the following courses: Latin 63, 64, 91, 92, and 97, or an equivalent. 1 s.h. (E) DR. WOMBLE

101. TACITUS.—Interesting and historically important selections from the *Annals* or the *Histories* of Tacitus are read, with attention to the literary style and the value of the historical narrative. 3 s.h. (E) PROFESSOR ROGERS

102. JUVENAL.—Juvenal's literary satire forms the basis of the course. 3 s.h. (E)
PROFESSOR ROGERS

103. CICERO.—Selections from one of the major philosophical works, with attention to Cicero's philosophical thought and literary style. 3 s.h. (E)
PROFESSOR ROGERS

104. LUCRETIUS.—A study of Lucretius as a philosophical thinker and as a poetic artist. 3 s.h. (E) PROFESSOR ROGERS

105-106. LATIN PROSE COMPOSITION.—Recommended to students who are pursuing courses 63, 64, 91, 92, and 97, and may at the discretion of the instructor be required of such students. 4 s.h. (E)

111, 112. ROMAN LITERATURE IN ENGLISH TRANSLATION.—Selective readings in Latin Literature in English translation with emphasis on the drama, lyric poetry, and the varied contributions of Cicero to literature in the first term, and upon the epic, the satire, and the novel in the second semester. (No language credit.) 6 s.h. (E) DR. WOMBLE

131, 132. HISTORY OF ROME.—A survey of the history of the Roman State from its beginnings to the death of Justinian; its expansion; development of its constitution and public administration; social, legal, political and economic problems of perennial life and interest; the background and setting of Christianity's rise and growth. (This course carries no language credit. No knowledge of Latin is required for admission.) 6 s.h. (E) PROFESSOR ROGERS

211-212. ROMAN ORATORY.—A reading course in the history and development of Roman oratory, based for the most part on Cicero's *Brutus* and the *Dialogus* of Tacitus. 6 s.h. (E) PROFESSOR ROGERS

DEPARTMENTAL MAJOR

Prerequisite: Latin 1-2, 63-64, or equivalent.

Major Requirements: 24 semester hours which must include courses 91, 92, 101, 102, 103-104, and 6 semester hours in courses at the 200-level.

Recommended Courses: Latin 105-106, Composition, and 131, 132, Roman History.

Related Work: Eighteen hours of related work, elected usually in Greek, Philosophy, Art, Romance Languages, and English. Majors who contemplate graduate work are reminded of the necessity of Greek, German, and French for such study.

MATHEMATICS

PROFESSOR GERGEN, CHAIRMAN; PROFESSOR DRESSEL, DIRECTOR OF UNDERGRADUATE STUDIES; PROFESSOR HICKSON, SUPERVISOR OF FRESHMAN INSTRUCTION; PROFESSORS CARLITZ, ELLIOTT, MURRAY, ROBERTS, AND THOMAS; ASSISTANT PROFESSORS GALLIE, MCLEOD, REYNOLDS, SHOENFIELD, AND WARNER; VISITING ASSISTANT PROFESSOR WYLIE; RESEARCH INSTRUCTORS DEBRUNNER AND HARRIS; MRS. STONE; MESSRS. BERNSTEIN, DICE, FREIBURGHOUSE, GALBRAITH, HOOD, HORSFIELD, KEELER, MARCY, AND WAGNON

The following program of courses in Mathematics is planned for 1960-1961. Fall: 11, 21, 51, 52, 53, 111, 113, 135, 139, 221, 227, 235, 271, 285, 291; Spring: 21, 22, 52, 53, 112, 114, 131, 136, 140, 222, 228, 236, 272, 286, 292.

11. ALGEBRA AND TRIGONOMETRY.—Factoring, fractions, linear equations in one or several unknowns, introduction to coordinates and graphing, exponents and radicals, numerical trigonometry. Prerequisite: two units of college preparatory mathematics. 3 s.h. (W & E) STAFF

21, 22. INTRODUCTORY CALCULUS.—Real and complex numbers, rectangular and polar coordinates, graphs, trigonometric and inverse trigonometric functions, logarithmic and exponential functions, conic sections, limits, derivatives, maxima and minima, methods of integration, areas, volumes. Prerequisite: two and one-half units of college preparatory mathematics. Mathematics 21 is prerequisite for Mathematics 22. 6 s.h. (W & E) STAFF

The three calculus courses listed below, Mathematics 51, 52, 53, formerly offered in the Department, are scheduled for elimination from the Departmental program. Mathematics 51 will not be offered after the fall semester of 1960-1961, Mathematics 52 after the spring semester of 1960-1961, Mathematics 53 after the fall semester of 1961-1962. Only those students who have completed a course in analytic geometry prior to the fall semester of 1960-1961 should register for Mathematics 51.

51. CALCULUS I.—Differentiation of elementary functions, curve tracing, maxima and minima, motion, curvature, indeterminate forms. Prerequisite: Analytic geometry. 3 s.h. (W) STAFF

52. CALCULUS II.—Integration of elementary functions, areas, solids of revolution, length of arc, surfaces of revolution, centroids, moments of inertia, pressure. Prerequisite: Mathematics 51. 3 s.h. (W) STAFF

53. CALCULUS III.—Introduction to solid analytic geometry, partial differentiation, multiple integrals, series. Prerequisite: Mathematics 52. 3 s.h. (W) STAFF

63, 64. INTERMEDIATE CALCULUS.—Moments, centroids, indeterminate forms, Taylor's formula, approximation of integrals, improper integrals, infinite series, vectors and solid analytic geometry, partial derivatives, multiple integrals, introduction to ordinary differential equations. Prerequisite: Mathematics 22 for 63; and 63 for 64. 6 s.h. (w) STAFF

111. APPLIED MATHEMATICAL ANALYSIS I.—Ordinary and partial linear differential equations with constant coefficients, Fourier series and their applications, vectors. Not open to students who have had Mathematics 131. Prerequisite: Mathematics 53 or 64. 3 s.h. (w) STAFF

112. APPLIED MATHEMATICAL ANALYSIS II.—Complex variables, residues, conformal mapping, matrices, Laplace and Fourier Transforms and their applications. Prerequisite: Mathematics 53 or 64. 3 s.h. (w) STAFF

113, 114. MODERN ALGEBRA.—Vector spaces, linear transformations, matrices, elementary theory of groups, rings, and fields. Prerequisite: Mathematics 52 or 63 for 113; and 113 for 114. 6 s.h. (w) ASSISTANT PROFESSOR WARNER

131. ELEMENTARY DIFFERENTIAL EQUATIONS.—Solution of differential equations of elementary types; formation and integration of equations arising in applications. Not open to students who have had Mathematics 111. Prerequisite: Mathematics 52 or 63. 3 s.h. (w) STAFF

135, 136. PROBABILITY AND STATISTICS.—Permutations and combinations, total and compound probability, Bayes' formula, Bernouilli's theorem, discrete distributions, central values, moments and mathematical expectation, law of large numbers, probabilities in continuum, continuous distributions, sampling distributions, confidence limits, tests of hypotheses, and analysis of variance. Prerequitite: Mathematics 52 or 63 for 135; and 135 for 136. 6 s.h. (w) PROFESSOR HICKSON

139, 140. ADVANCED CALCULUS.—Multiple integrals and Jacobians, infinite series, power series, differential equations, vector analysis, line and surface integrals, Green's theorem, Stoke's theorem, improper integrals. Prerequisite: Mathematics 53 or 64 for 139; and 139 for 140. 6 s.h. (w) PROFESSOR ELLIOTT

FOR SENIORS AND GRADUATES

205. ALGEBRA FROM AN ADVANCED STANDPOINT.—This course is designed for teachers of secondary school mathematics. Topics considered are real and complex numbers, elementary number theory, scales of notation, Diophantine problems, continued fractions, summation of series, binomial theorem, interest and annuities. 3 s.h. (w) (Retired Officers Program only.) PROFESSOR THOMAS

206. PLANE GEOMETRY FROM AN ADVANCED STANDPOINT.—Postulates for Euclidean geometry, duality, non-Euclidean geometries, geometric rigor, theory of linear and angular measurements, accuracy of logarithmic tables and calculations, nomograms and other computing aids. 3 s.h. (w) (Retired Officers Program only.) PROFESSOR THOMAS

211. FINITE MATHEMATICS.—Compound statements, sets and subsets, partitions and counting, probability theory, vectors and matrices, linear programming and the theory of games, applications to behavioral science problems. Prerequisite: Mathematics 53 or 64. 3 s.h. (w) (Retired Officers Program only.) PROFESSOR GERGEN

212. MATHEMATICAL ANALYSIS.—Elements in the theory of functions, principally for real variables. Sequences and series, continuity, differentiation, integration. 3 s.h. (w) (Retired Officers Program only.) PROFESSOR GERGEN

215, 216. ANALYSIS.—Introduction to set theory, construction of real and complex numbers beginning with the Peano postulates, elementary topology of real and complex numbers, properties of continuous functions, derivatives, mean value theorem, Riemann integral, fundamental theorem of integral calculus. Prerequisite: Mathematics 53 or 64 for 215; and 215 for 216. 6 s.h. (w) STAFF

221. DIGITAL COMPUTER.—History of computers; number representation, information storage, logical arithmetic; components and organization of computing

systems; coding and programming; programmed arithmetics, function and functional subroutines, interpretive routines, compilers; error analysis. Two lectures, one laboratory. Prerequisite: Mathematics 22 or 52 3 s.h. (w)
ASSISTANT PROFESSOR GALLIE

222. INTRODUCTION TO NUMERICAL ANALYSIS.—Introduction to numerical analysis, error analysis, real and complex roots of equations, finite difference methods and theory of interpolation, numerical differentiation and integration, numerical integration of ordinary and partial differential equations, simultaneous equations and matrix inversion. Two lectures, one laboratory. Prerequisite: Mathematics 53 or 64 and 221. 3 s.h. (w) ASSISTANT PROFESSOR GALLIE

227, 228. THEORY OF NUMBERS.—Congruences, arithmetic functions, compound moduli, quadratic reciprocity, Gauss sums, quadratic forms, sums of squares. Prerequisite: Mathematics 53 or 64 for 227; and 227 for 228. 6 s.h. (w)
PROFESSOR CARLITZ

229, 230. ALGEBRAIC NUMBERS.—Ideals, unique factorization, divisors of the discriminant, determination of the class number. Prerequisite: Mathematics 113 for 229; and 229 for 230. 6 s.h. (w) PROFESSOR CARLITZ

235, 236. ABSTRACT ALGEBRA.—Groups, fields, rings, matrices, quadratic and bilinear forms, general Galois theory, hypercomplex systems. Prerequisite: Mathematics 53 or 64 for 235; and 235 for 236. 6 s.h. (w) PROFESSOR CARLITZ

247, 248. ARITHMETIC OF POLYNOMIALS.—Field theory, detailed study of finite fields, special polynomials and functions, valuation theory, the zeta function. Prerequisite: Mathematics 235 or consent of the instructor for 247; and 247 for 248. 6 s.h. (w) PROFESSOR CARLITZ

253, 254. DIFFERENTIAL GEOMETRY.—Curves and surfaces in three dimensional Euclidean Space, applicability, differential parameters, Riemannian geometry of n-space. Prerequisite: Mathematics 53 or 64 for 253; and 253 for 254. 6 s.h. (w) PROFESSOR THOMAS

271, 272. INTRODUCTORY TOPOLOGY.—Topological properties of Euclidean spaces, set-theoretic and combinatorial methods. Prerequisite: Mathematics 53 or 64 for 271; and 271 for 272. 6 s.h. (w) ASSISTANT PROFESSOR SHOENFIELD

285. MATHEMATICAL ANALYSIS FOR CHEMISTS AND PHYSICISTS.—Vectors, line and surface integrals, tensors, complex variables, differential and integral equations. Prerequisite: Mathematics 53 or 64. 3 s.h. (w)
PROFESSOR DRESSEL

286. MATHEMATICAL ANALYSIS FOR CHEMISTS AND PHYSICISTS.—Wave equation, Fourier series, heat equation, telegraphic equations, Legendre polynomials, Bessel functions, Schrödinger's equation. Prerequisite: Mathematics 53 or 64. 3 s.h. (w) PROFESSOR DRESSEL

287, 288. FOUNDATIONS OF MATHEMATICS.—Propositional calculus, predicate calculus, axiomatized number theory. Gödel completeness and incompleteness theorems. Recursive functions; hierarchies; constructive ordinals. Set theory; consistency of the axiom of choice. Prerequisite: Mathematics 53 or 64, or consent of instructor for 287; and 287 for 288. 6 s.h. (w) ASSISTANT PROFESSOR SHOENFIELD

291, 292. THEORY OF FUNCTIONS.—Limits, implicit functions, power series, double series, Cauchy's theorem and its applications, residues, Riemann surfaces, conformal mapping. Prerequisite: Mathematics 53 or 64 for 291; and 291 for 292.
PROFESSOR GERGEN

DEPARTMENTAL MAJOR

For the A.B. degree:

Prerequisite: Mathematics 21, 22.

Major and Related Work: 42 semester hours.

Major Requirements: Mathematics 63, 64 and 18 semester hours in courses in mathematics numbered above 100.

Related Work: 18-24 semester hours of course work, ordinarily in the following departments: chemistry, economics and business administration, philosophy, physics.

For the B.S. degree:

Prerequisite: Mathematics 21, 22.

Major and Related Work: 48 semester hours.

Major Requirements: Mathematics 63, 64 and 18 semester hours in courses in mathematics numbered above 100.

Related Work: 14-24 semester hours of course work in the natural sciences.

The Department offers work leading to graduation with distinction. See the section on Honors in this *Bulletin.*

MEDICAL SCIENCE

These courses in medical science have been approved by the Faculty Council as appropriate for the Bachelor's degree.

M201. ANATOMY AS RELATED TO LOCOMOTION.—The part of the body concerned with locomotion and posture will be dissected completely, whereas the thoracic, abdominal and pelvic organs, and the deeper structures of the head will be taught by means of audio-visual aids and prosections. September to January. Prerequisites: One year each of biology, chemistry, and physics. 6 s.h.

PROFESSORS MARKEE AND EVERETT; ASSOCIATE PROFESSORS BECKER AND DUKE

203. HUMAN PHYSIOLOGY.—A course in human physiology in which the functions of all organ systems are covered. Special emphasis is given to the study of neuro-muscular and cardiovascular functions. Lectures, laboratory experiments and demonstrations, and conferences. Limited to 16 students. Primarily for physical therapy students. Prerequisites: Chemistry 1-2 and Zoology 1-2. 6 s.h.

ASSISTANT PROFESSOR WAYLAND HULL AND STAFF

MUSIC

See Department of Aesthetics, Art, and Music

NAVAL SCIENCE

PROFESSOR AINSWORTH, CAPTAIN, U. S. NAVY, CHAIRMAN; ASSOCIATE PROFESSOR MCCANTS COMMANDER, U. S. NAVY, DIRECTOR OF UNDERGRADUATE STUDIES; ASSISTANT PROFESSOR MCCARTHY, LIEUTENANT COMMANDER, U. S. NAVY, SUPERVISOR OF FRESHMAN INSTRUCTION; ASSISTANT PROFESSORS KLINE, LIEUTENANT COMMANDER, U. S. NAVY, BAYSINGER, LIEUTENANT COMMANDER, U. S. NAVY, AND HILL, LIEUTENANT, U. S. NAVY; ASSISTANT PROFESSOR EZELL, MAJOR, U. S. MARINE CORPS

Standardized titles and numbers for courses are established by the Bureau of Naval Personnel for use at the 52 NROTC institutions. The first digit indicates the year of the course: the second digit indicates whether semester or quarter (0 for semester, 1 for quarter); the third digit indicates the semester or quarter of school year in which offered. Specialized courses for Marine Corps officer candidates are indicated by the letter "M" after the number, and substitute for the basic course of the same number.

NS 101. NAVAL ORIENTATION.—History of navy regulations, naval customs and courtesies considered basic to further study of Naval Science. Introduction to carrier, air, surface, undersea, and amphibious warfare; basic types, characteristics, capabilities, and limitations of naval vessels; deck seamanship; naval formations and maneuvers. 3 s.h. (w)

COMMANDER MCCANTS; LIEUTENANT COMMANDER MCCARTHY; LIEUTENANT COMMANDER BAYSINGER

NS 102. NAVAL HISTORY.—Naval history relating the rise and fall of sea power to other aspects of world history as a basis for understanding the role of navies in the world today. 3 s.h. (w)

COMMANDER MCCANTS; LIEUTENANT COMMANDER MCCARTHY

91. INTRODUCTORY PSYCHOLOGY.—See page 106 of this *Bulletin* for course description. This is a required University course for all NROTC midshipmen.

NS 202. NAVAL WEAPONS.—A comprehensive study of the basic scientific principles of Naval Ordnance including guns, torpedoes, mines, rockets and guided missiles. 3 s.h. (w) LIEUTENANT COMMANDER BAYSINGER

NS 301. NAVAL ENGINEERING.—Principles of steam engineering as related to naval installations for main propulsion and auxiliaries; future trends in naval engineering plants, ship stability and buoyancy in the practice of ship design and damage control; a general understanding of Diesel Engines. 3 s.h. (w)
LIEUTENANT COMMANDER KLINE

NS 301M. EVOLUTION OF THE ART OF WAR.—A survey of the evolution of weapons, strategy, tactics and material; illustration of the classic principles of war by a study of selected battles and campaigns; a summary of the development of U. S. military and foreign policy. 3 s.h. (w) MAJOR EZELL
For Marine Corps Candidates.

NS 302. NAVIGATION.—Magnetic and gyro compasses; principles of chart construction; dead reckoning; piloting; nautical astronomy including a study of the actual and apparent motion of the earth, celestial coordinates, time systems, the astronomical triangle, identification of stars and planets; solutions of observations for lines of position; complete day's work in practical navigation. 3 s.h. (w)
LIEUTENANT COMMANDER KLINE

NS 302M. MODERN BASIC STRATEGY AND TACTICS.—Modern tactical principles and techniques, especially on the small unit level, illustrated by contemporary historical examples; development of a general understanding of strategy. 3 s.h. (w) MAJOR EZELL
For Marine Corps Candidates.

NS 401. NAVAL OPERATIONS.—Tactics and operations including concepts of combined fleet, force, and group operations; watchstanding duties afloat; relative motion and its application to tactical maneuvering; electronic navigation; communications from ship to ship through fleet levels; Rules of the Nautical Road. 3 s.h. (w) LIEUTENANT HILL

NS 401M. AMPHIBIOUS WARFARE.—History and development of amphibious operations and organization; analyses of amphibious operations of World War II and of the Korean action. 3 s.h. (w) MAJOR EZELL
For Marine Corps Candidates.

NS 402. PRINCIPLES AND PROBLEMS OF LEADERSHIP.—A study of principles and techniques which will assist the newly commissioned officer in performing his leadership functions in the Navy. This includes the principles and problems of human relations and applies these principles to decision making and management planning. 3 s.h. (w) LIEUTENANT HILL

NS 402M. AMPHIBIOUS WARFARE, PART II.—Further study of selected amphibious operations; Uniform Code of Military Justice; leadership. 3 s.h. (w)
For Marine Corps Candidates. MAJOR EZELL

PHILOSOPHY

PROFESSOR BAYLIS, CHAIRMAN; ASSOCIATE PROFESSOR WELSH, ACTING DIRECTOR OF UNDERGRADUATE STUDIES; ASSISTANT PROFESSOR WILSON, SUPERVISOR OF FRESHMAN INSTRUCTION; PROFESSOR NEGLEY; ASSOCIATE PROFESSORS CLARK AND PEACH; DR. BINKLEY

The undergraduate program in the Department of Philosophy is designed to acquaint students with the content and the structure of philosophical theory in various areas. Discussion is encouraged so that the student can engage actively in the philosophical examination of problems.

Course offerings fall into two general categories: the systematic and the historical. In a systematic treatment, the organization of a course is primarily in terms of the problems presented by the subject-matter of that course, as in logic, ethics, metaphysics, etc. In historical courses, attention is directed more to the order of de-

velopment in the thought of a particular philosopher (Plato, Aristotle, Kant, etc.), or in a historical period. In all courses, reading of the works of philosophers will acquaint the student with the important and influential contributions to the definition and solution of philosophical issues.

The problems raised in philosophy in respect to the various fields of the arts and sciences involve questions which are not normally given attention in those particular disciplines. In the consideration of such problems, therefore, it is expected that the student will acquire some understanding and perspective of the major areas of man's intellectual endeavor. In this sense, philosophical comprehension is an essential part of a student's learning and education.

The following courses fulfill minimum uniform requirements:

Literature, Art, Music, and Philosophy (six hours required)—Philosophy 49, 91, 93, 94, 97, 98, 109, 117.

Natural Sciences (eleven hours required)—Three of the eleven hours may be fulfilled by Philosophy 48, 103, or 104.

48. LOGIC.—A study of the conditions of effective thinking and clear communication. Examination of the basic principles of *deductive* reasoning (making explicit the implications of statements) and of *inductive* reasoning (the formulation and testing of hypotheses on the basis of experience and experiment). Open to freshmen and sophomores only. 3 s.h. (E & W)
ASSOCIATE PROFESSORS CLARK AND WELSH; DR. BINKLEY

49. ETHICS.—A philosophical consideration of such basic ethical concepts as right and wrong, good and evil, freedom and duty, together with a study of some of the major types of ethical theory. Open to freshmen and sophomores only. 3 s.h. (E & W) PROFESSORS BAYLIS AND NEGLEY; ASSOCIATE PROFESSOR WELSH; DR. BINKLEY

91. INTRODUCTION TO PHILOSOPHY.—A systematic and historical examination of the major problems of knowledge, morals, and metaphysics. 3 s.h. (E & W) (Open to freshmen with a *B* average.) STAFF

93. HISTORY OF PHILOSOPHY; ANCIENT AND MEDIEVAL.—A study of the major philosophers of the period with special reference to the continuity of their thought. 3 s.h. (E & W) ASSISTANT PROFESSOR WILSON

94. HISTORY OF PHILOSOPHY: MODERN.—A study of the major philosophers of the period with special reference to the continuity of their thought. 3 s.h. (E & W) ASSOCIATE PROFESSOR PEACH; DR. BINKLEY

97. POLITICAL AND SOCIAL PHILOSOPHY.—Discussion of the fundamental principles of political and social organization, with particular attention to democratic philosophy, corporate theory, and Marxist ideology. Open only to sophomores and juniors. 3 s.h. (W) PROFESSOR NEGLEY

98. SOCIAL IDEALS AND UTOPIAS.—Reading of selected Utopias; analysis of the value-structures and political principles of these ideal societies. 3 s.h. (W)
PROFESSOR NEGLEY

101. PHILOSOPHY OF RELIGION.—A philosophical examination of selected concepts and doctrines of religion. 3 s.h. (E) DR. BINKLEY

103. SYMBOLIC LOGIC.—Detailed analysis of deduction and of deductive systems. Open to sophomores only by permission of instructor. 3 s.h. (E)
ASSOCIATE PROFESSOR CLARK AND ASSISTANT PROFESSOR WILSON

104. PHILOSOPHY OF SCIENCE.—The principal philosophical and methodological problems in contemporary science. 3 s.h. (E) ASSOCIATE PROFESSOR CLARK

109. PHILOSOPHY OF LANGUAGE.—A philosophical analysis of problems arising in the study of language and symbolism. Topics include: the nature of language, sign-using behavior, theories of meaning, types of discourse (scientific, mathematical, poetic), definition, ambiguity, metaphor. 3 s.h. (E)
ASSOCIATE PROFESSOR WELSH

110. EPISTEMOLOGY.—A treatment of the problems of truth and knowledge; of *a priori* and empirical statements; and of theories of perception and probability. 3 s.h. (E) ASSISTANT PROFESSOR WILSON; DR. BINKLEY

111. METAPHYSICS.—Traditional treatments of the mind-body problem; dualism; phenomenalism and materialism; rival theories of causation, space and time. 3 s.h. (E) ASSISTANT PROFESSOR WILSON; DR. BINKLEY

117. HISTORY OF ETHICS.—The development of ethical thought in the West; the interaction between culture and ethical theory, with special reference to the Greek city-state, Roman law, the Renaissance, the Reformation and the rise of modern science. Readings in the great ethical philosophers. 3 s.h. (E) ASSOCIATE PROFESSOR WELSH

FOR SENIORS AND GRADUATES

202. PHILOSOPHY OF ART.—A study of some fundamental issues in aesthetics, with particular reference to the fields of literature, music, and painting. Problems discussed include: the nature and purposes of the arts; meaning in the arts; art and morality; the role of standards in art criticism; aesthetic judgment; interpretation and evaluation. 3 s.h. (E) ASSOCIATE PROFESSOR WELSH

203. CONTEMPORARY ETHICAL THEORIES.—Critical discussion and evaluation of the ethical views of twentieth century British and American philosophers. 3 s.h. (E) PROFESSOR BAYLIS; DR. BINKLEY

205. THE PHILOSOPHY OF HISTORY.—Discussion of the method, metaphysical implications, and influence of interpretations of history; Hegel, Marx, Spengler, Toynbee. 3 s.h. (W) PROFESSOR NEGLEY

208. POLITICAL PHILOSOPHY.—Analysis of the structure of social organization with particular reference to the nature of political and legal institutions. 3 s.h. (W) PROFESSOR NEGLEY

211. PLATO.—An examination of Plato's views with respect to knowledge, reality, and the state. 3 s.h. (E)

217. ARISTOTLE.—An analysis of Aristotle's views with respect to knowledge, reality, and the state. 3 s.h. (E)

219. KANT.—Reading and discussion of his philosophy, with some attention to historical continuity. 3 s.h. (W) PROFESSOR NEGLEY

225. BRITISH EMPIRICISM.—A critical study of the writings of Locke, Berkley, and Hume, with special emphasis on problems in the theory of knowledge. 3 s.h. (E) ASSOCIATE PROFESSOR PEACH

227. CONTINENTAL RATIONALISM.—A critical study of the writings of Descartes, Spinoza, and Leibnitz, with special emphasis on problems in the theory of knowledge and metaphysics. 3 s.h. (E) ASSOCIATE PROFESSOR PEACH

228. RECENT AND CONTEMPORARY PHILOSOPHY.—A critical study of outstanding philosophical views from Schopenhauer to the present. 3 s.h. (E) ASSOCIATE PROFESSORS PEACH AND WELSH

229. AMERICAN PRAGMATISM.—Studies in the philosophy of Pierce, James, Dewey, and Mead. 3 s.h. (E) ASSOCIATE PROFESSOR WELSH

232. SPECIAL PROBLEMS IN THE PHILOSOPHY OF SCIENCE.—Selected topics concerning the methods of the sciences and the philosophy of science. 3 s.h. (E) ASSOCIATE PROFESSOR CLARK

241. LOGIC.—Fundamental problems of logic. 3 s.h. (E) ASSOCIATE PROFESSOR CLARK AND ASSISTANT PROFESSOR WILSON

250. PHILOSOPHICAL ANALYSIS.—A critical study of recent and contemporary essays in philosophical analysis, and an evaluation of the nature, methods, and results of this movement. 3 s.h. (E) PROFESSOR BAYLIS; ASSOCIATE PROFESSOR CLARK; ASSISTANT PROFESSOR WILSON

252. METAPHYSICS.—A critical and evaluative study of rival metaphysical theories and their bases. Analysis of the fundamental metaphysical categories and of metaphysical methods. 3 s.h. (E)

PROFESSOR BAYLIS; ASSOCIATE PROFESSOR CLARK; ASSISTANT PROFESSOR WILSON

291, 292. CRITICAL PHILOSOPHY.—The analysis of basic philosophical concepts and beliefs with a view to critical evaluation and constructive emendation of them. Emphasis on the practice as well as the principles of philosophical criticism and problem solving. 3 s.h. each. Enrollment only by permission of the department. 291 is ordinarily prerequisite for 292. (E) THE GRADUATE STAFF

DEPARTMENTAL MAJOR

Philosophy 48 (Logic) is recommended for all those intending to major in philosophy.

Major Requirements: Twenty-four semester hours in philosophy in courses numbered above 50 including the following:

Philosophy 93 and 94.

Philosophy 117, or 203, or 208.

6 semester hours in Philosophy senior-graduate courses.

Related Work: Six hours minimum in each of two departments approved by the Philosophy adviser. Courses may not be those primarily open to freshmen. There is no restriction in principle as to departments in which related work may be taken, and the approval of the Philosophy adviser is required only to insure some coherence in the program of major and related work as a whole.

The Department offers work leading to graduation with distinction. See the section on Honors.

PHYSICS

PROFESSOR NIELSEN, CHAIRMAN AND ACTING DIRECTOR OF UNDERGRADUATE STUDIES; PROFESSOR CARPENTER, SUPERVISOR OF FRESHMAN INSTRUCTION; PROFESSORS GORDY, LEWIS, NEWSON, AND SPONER; ASSOCIATE PROFESSORS BLOCK, GREULING, AND WILLIAMSON; ASSISTANT PROFESSOR MEYER; VISITING LECTURERS R. L. EDWARDS AND S. GITHENS; VISITING ASSISTANT PROFESSORS BILPUCH, DUNCAN, AND ROBL; PART-TIME VISITING INSTRUCTORS BEVINGTON, KOVACS, FLETCHER, TILLEY, AND WISSEMAN; MR. PULLMAN

A student wishing to major in physics should arrange to complete the necessary mathematics as soon as possible.

1-2. INTRODUCTORY PHYSICS.—This course traces historically and experimentally the development of the important principles of physics. This course is open to freshmen, sophomores and juniors and meets the general science requirement. Three hours of recitation and one two-hour laboratory each week. 8 s.h. (W)

PROFESSORS CARPENTER AND NIELSEN; VISITING LECTURER GITHENS; AND ASSISTANTS

41-42. GENERAL PHYSICS.—This course treats the basic principles of general physics in a more quantitative manner than Physics 1-2. It meets in a thorough way the physics requirement for entrance into the study of either medicine or engineering, and is well suited for the general science student. This course is not open for credit for students who have completed Physics 1-2. Three lecture-recitations and one three hour laboratory period each week. Prerequisites: Mathematics 21, 22 or equivalent (Mathematics 21, 22 may be taken concurrently). 8 s.h. (W)

PROFESSOR CARPENTER, ASSOCIATE PROFESSOR WILLIAMSON, VISITING LECTURER EDWARDS, AND STAFF AND ASSISTANTS

125. INTERMEDIATE PHYSICS—MECHANICS.—The course covers in a thorough manner the elements of mechanics. Three recitations per week. Prerequi-

sites: Physics 1-2 or 41-42 or equivalent, and a course in differential and integral calculus. Math. 52 may be taken concurrently. 3 s.h. (w) PROFESSOR NIELSEN

126. INTERMEDIATE PHYSICS—ELECTRICITY.—The elements of electricity and magnetism. Three lectures and one three-hour laboratory per week. Prerequisites: Physics 125 or equivalent work approved by the instructor, and differential and integral calculus. 4 s.h. (w) PROFESSOR LEWIS

161, 162. MODERN PHYSICS.—Review of electromagnetic fields, relativity, quantum phenomena, atomic and molecular spectra, solids, and nuclear physics. Three lectures each week. Prerequisites: Physics 41-42, Mathematics 52. 161 is prerequisite for 162. 6 s.h. (w) VISITING LECTURER EDWARDS; MR. BEVINGTON

171. ELECTRONICS.—A.C. circuits, transients, fundamentals of vacuum tubes and electron physics, basic electronic circuits. Three lectures and one three-hour laboratory each week. Prerequisite: Physics 126 or equivalent work approved by the instructor. 4 s.h. (w) PROFESSOR LEWIS

176. INTERMEDIATE PHYSICS—THERMODYNAMICS AND KINETIC THEORY.—The elements of thermodynamics and kinetic theory and elementary statistical mechanics. Three recitations per week. Prerequisites: Physics 125 or equivalent work approved by the instructor, and differential and integral calculus. 3 s.h. (w) VISITING LECTURER EDWARDS

A course in general college physics, Physics 125 and 126 or equivalent validated by examination, and a course in differential and integral calculus are prerequisites to all courses numbered 200 and above.

201, 202. MECHANICS.—The fundamental principles of Newtonian mechanics; general dynamics of systems of particles and rigid bodies; the methods of LaGrange and Hamilton; generalized mechanics. 6 s.h.
VISITING ASSISTANT PROFESSOR ROBL; ASSOCIATE PROFESSOR GREULING

213, 214. CONTEMPORARY PHYSICS.—A course which covers the fundamental concepts and the experimental basis of modern physics. Three lectures each week. 6 s.h. (w) PROFESSORS SPONER AND LEWIS

217, 218. ADVANCED PHYSICS LABORATORY.—Measurements involving the fields of mechanics, electricity, magnetism, heat, sound, optics and modern physics. 2-6 s.h. (w) PROFESSORS NIELSEN AND LEWIS

219. ELECTRICITY AND MAGNETISM.—Fundamentals of electricity and magnetism. Physical optics. Electromagnetic waves. 3 s.h. (w) PROFESSOR LEWIS

220. ADVANCED ELECTRONICS.—Vacuum tubes and solid state devices, advanced circuit analysis. Three lectures and one three-hour laboratory each week. 4 s.h. (w) PROFESSOR LEWIS

225, 226. ELEMENTARY INVESTIGATIONS.—The aim of this course is to provide training in the laboratory and library methods of physical research. Properly qualified students may conduct elementary investigations under the supervision of a member of the staff. 3-6 s.h. (w) THE STAFF

DEPARTMENTAL MAJOR

A. for the A.B. degree:

Prerequisites: Physics 1-2 or 41-42 or equivalent, and Mathematics 21, 22.

Major Requirements: Eighteen to 24 semester hours in physics including Physics 125, 126, 171, and 176 or equivalent.

Related Work: Eighteen to 24 semester hours from the following courses: Mathematics 51, 52, 53 and 131, and Chemistry 1-2.

B. For the B.S. degree:

Prerequisites: Physics 1-2 or 41-42 or equivalent, and Mathematics 21, 22 or equivalent.

Major Requirements: Twenty-four to 34 semester hours in physics including Physics 125, 126, 171, and 176 or equivalent.

Related Work: Fourteen to 24 semester hours from the following courses: Mathematics 51, 52, 53 and 131, and Chemistry 1-2.

The Department offers work leading to graduation with distinction. See the section on Honors.

POLITICAL SCIENCE

PROFESSOR RANKIN, CHAIRMAN; PROFESSOR HALLOWELL, DIRECTOR OF UNDERGRADUATE STUDIES; PROFESSORS BRAIBANTI, COLE, CONNERY, AND WILSON; VISITING PROFESSORS MAYO AND PARTRIDGE; ASSOCIATE PROFESSORS SIMPSON AND SINDLER; VISITING ASSOCIATE PROFESSOR WEBB; ASSISTANT PROFESSORS CHEEK, HALL, HANSON, HAVENS, LEACH, AND PROCTOR; VISITING ASSISTANT PROFESSORS GILLESPIE AND NELSON

The general objective of the Department of Political Science is to acquaint students with the theory and practice of government and politics at the local, state, national and international levels. While primary attention is focused upon the American political and administrative system, emphasis is also placed upon a comparative study of the political institutions and movements of thought peculiar to the nations of Europe, Latin America and the Far East. The student's attention is also directed to the problems encountered in international organization, politics and law. The development of political theories from Plato to the present day is an essential part of the department's course offerings. Methods of study include the descriptive, the historical, the legal, the comparative and the philosophical.

Directing its effort to an intelligent understanding of the contemporary world and of the responsibilities which are laid upon citizens of a democracy, the Department of Political Science shares the general objectives of a liberal arts education. While the department does not aim at vocational education, the knowledge it seeks to impart should be useful to anyone contemplating a career in the government service or politics.

Students intending to major in the department should take Political Science 11-12 or 61-62. Ordinarily one of them must be taken before proceeding to more advanced work in the department. This rule may be waived with the consent of the Director of Undergraduate Studies. Sophomores who have completed Political Science 11-12 may take Political Science 62 for credit.

The advanced courses are divided into three major groups but no sequence of courses beyond the introductory course is prescribed. The student would be well advised, however, to select some courses from each group.

The Senior Seminars are designed to provide an opportunity for majors in the department to pursue independent study and research.

INTRODUCTORY COURSES

11-12. THE AMERICAN SYSTEM OF GOVERNMENT.—An introductory study of the principles and operation of the American government in the light of the present world position of the United States. The first semester is devoted to the institutions and politics of American government; the second semester to such issues as civil liberties, American foreign policies and government policy toward agriculture, labor and business. (Only open to Freshmen.) 6 s.h. (E & W)

ASSOCIATE PROFESSOR SINDLER; ASSISTANT PROFESSORS CHEEK AND HALL; VISITING ASSISTANT PROFESSOR NELSON

[Students who complete 11 in the spring semester should thereafter take course 62 instead of 12.]

61-62. AMERICAN AND COMPARATIVE POLITICAL SYSTEMS.—An introduction to the theory and practice of modern government. The first semester is devoted to the study of American constitutional democracy. Topics examined include federal-state relations, the separation and interrelationships of the executive, legislative and judicial branches of government, judicial review, the role of political parties and public opinion, the formulation and execution of domestic and foreign policy, civil liberties. The second semester is devoted to a study of constitutional democracy in Great Britain and France with emphasis upon the similarities and differences be-

tween those systems and our own. Detailed attention is also given to an examination of the theory and practice of totalitarian dictatorship as exemplified in the U.S.S.R. 6 s.h. (E & W)

PROFESSOR CONNERY; VISITING PROFESSOR MAYO; ASSOCIATE PROFESSOR SIMPSON; VISITING ASSOCIATE PROFESSOR WEBB; ASSISTANT PROFESSORS CHEEK, HALL, HANSON, HAVENS, LEACH, AND PROCTOR; VISITING ASSISTANT PROFESSOR GILLESPIE

[Not open to freshmen. Students who have taken 11-12 may not take 61 for credit but may take 62.]

POLITICAL THEORY AND COMPARATIVE GOVERNMENT

123. INTRODUCTION TO POLITICAL PHILOSOPHY.—A course devoted to the reading and discussion of selected political classics including Plato's *Republic*, Aristotle's *Ethics* and *Politics* and other works as time permits. 3 s.h. (W)

PROFESSOR HALLOWELL AND ASSISTANT PROFESSOR LEACH

133. THE POLITICS OF SOUTHEAST ASIA.—An analysis of the development of government in Thailand, Vietnam, Burma, Malaya, Indonesia and the Philippines. Attention will be given to the Islamic, Buddhist and other indigenous cultures of these nations as well as to the colonial administrations of the Netherlands, France, Britain, and the United States. Emphasis will be on the problems involved in the emergence of various constitutional forms in these nations with the advent of independent statehood. 3 s.h. (W) PROFESSOR BRAIBANTI

136. MAJOR EUROPEAN GOVERNMENTS.—A general introductory survey of the governments of Great Britain, France, Germany, Italy, and the Soviet Union. Special attention is given to constitutional developments, the organization and ideologies of political parties, and current political problems. 3 s.h. (W) [Not open to students who have taken Political Science 62 but open to all others without prerequisite.] PROFESSOR COLE

151. GOVERNMENTS AND POLITICS OF MEXICO AND THE CARIBBEAN AREA.—A study of their contemporary governments, political problems and international relations. 3 s.h. (W) ASSISTANT PROFESSOR PROCTOR

152. THE GOVERNMENTS AND POLITICS OF SOUTH AMERICA.—The constitutional development, governmental organization, inter-American co-operation and political problems of the principal South American states. 3 s.h. (W)

ASSISTANT PROFESSOR PROCTOR

211. POLITICAL INSTITUTIONS OF THE FAR EAST.—An analysis of the ideas underlying the development of government in Japan, China, and Korea. Study of the writings of Lao-tse, Confucius and the sacred books of Buddhism and Shinto. Particular attention is given to the theory of Confucian bureaucracy, the Taikwa Reform, the development of the Tokugawa administrative state, the constitutional reforms of Sun Yat-sen in China and of the Meiji Era in Japan. 3 s.h. (W)

PROFESSOR BRAIBANTI

223. POLITICAL THOUGHT TO THE SEVENTEENTH CENTURY.—A survey from the time of Plato to the close of the sixteenth century; Graeco-Roman, Patristic and Germanic thought; individualism and cosmopolitanism; effect of the Church-State controversy and the conciliar movement: medieval constitutionalism; legislative sovereignty. 3 s.h. (W) PROFESSORS WILSON AND HALLOWELL

224. MODERN POLITICAL THEORY.—An historical survey and philosophical analysis of political theory from the beginning of the seventeenth to the middle of the nineteenth century. Attention is given to the rise of liberalism, the Age of Enlightenment, the romantic and conservative reaction, idealism and utilitarianism. 3 s.h. (W) PROFESSOR HALLOWELL; VISITING PROFESSOR MAYO

225. COMPARATIVE GOVERNMENT AND POLITICS.—A comparative study of modern political institutions and processes, with particular attention to European constitutional government and politics. 3 s.h. (W)

PROFESSOR COLE; VISITING PROFESSOR PARTRIDGE

226. COMPARATIVE GOVERNMENT AND POLITICS.—A comparative study

of modern political institutions and processes, with particular attention to European totalitarian and authoritarian political systems. 3 s.h. (w)
PROFESSOR COLE; ASSISTANT PROFESSOR PROCTOR

229. RECENT AND CONTEMPORARY POLITICAL THEORY.—The rise of positivism and its impact upon modern political thought, the origins of socialism, Marxism and its variants, socialism in the Soviet Union, nationalism, Fascism and National Socialism, the crisis in modern democracy, Christianity and the social order. 3 s.h. (w) PROFESSOR HALLOWELL

231. AMERICAN POLITICAL THEORY.—An analysis of the main currents in American political thought from colonial beginnings to the present day, with emphasis upon the development of liberalism in America. 3 s.h. (w)
PROFESSOR HALLOWELL; VISITING PROFESSOR MAYO

235. THE BRITISH COMMONWEALTH.—An analysis of the political relationships between the members of the Commonwealth and a comparative study of the political systems of the Commonwealth countries, with particular reference to Canada. 3 s.h. (w) PROFESSOR COLE

AMERICAN GOVERNMENT AND PUBLIC ADMINISTRATION

125. AMERICAN POLITICAL PARTIES AND PRACTICAL POLITICS.—A study of the historical development, organization, and methods of political parties in the United States. 3 s.h. (w) ASSOCIATE PROFESSOR SIMPSON

129. GROUPS IN AMERICAN POLITICS.—A study of the composition, methods, and policies of organized groups as they participate in the creation of public opinion and in the formulation of public policy. Attention will be focused on recent national policy in the areas of agriculture, business, labor, education, welfare, foreign affairs, and on the roles that groups play in the formulation of these policies. 3 s.h. (w) ASSOCIATE PROFESSOR SINDLER

137. POLITICAL BEHAVIOR IN ELECTIONS.—The behavioral approach will be used to examine decision-making in the political process. Attention will be focused on the major factors that affect the outcome of elections, such as the characteristics of the American voter, the conduct of campaigns, the influence of propaganda and public relations techniques, and the influence of campaign finance. 3 s.h. (w) ASSOCIATE PROFESSOR SINDLER

138. POLITICAL BEHAVIOR IN POLICY MAKING.—A study of the major factors that come into play in the making of governmental policy decisions. Special attention will be paid to the role of pressure groups and the methods of their lobbyist representatives, to the effects of pressures from constituents, and to the pressures of the executive and legislative branches upon each other 3 s.h. (w)
ASSISTANT PROFESSOR HAVENS

141. PUBLIC ADMINISTRATION.—An introduction to the role of administration in the governmental process considering principles of administrative organization, methods of administrative control, personnel and fiscal management. In general the study of the organizational and administrative problems encountered by any government agency charged with carrying out a public policy. 3 s.h. (w)
ASSISTANT PROFESSOR HALL; VISITING ASSISTANT PROFESSOR NELSON

146. LEGISLATION.—A study of the composition and structures of legislative bodies and of the legislative process with attention to procedure, methods, techniques, delegation of discretion, and the use of controls. 3 s.h. (w)
ASSOCIATE PROFESSOR SIMPSON

161. GOVERNMENT AND PLANNING.—A study of special areas in government planning. The semester's work is divided into three parts: city planning—land use and zoning, housing and urban redevelopment; resource planning—the governmental problems involved in planning for the conservation and use of natural resources, with special attention given to multi-purpose development of the river and its watershed; and a brief consideration of proposals and developments in the general field of economic planning. 3 s.h. (w) ASSISTANT PROFESSOR HANSON

164. GOVERNMENT CONTROL OF THE SOCIAL AND ECONOMIC ORDER.—A study of governmental and administrative problems in the regulation of trade and the enforcement of the anti-trust laws, the regulation of transportation and communications and the role of the government in collective bargaining. Consideration is also given to the philosophic aspects of the general growth of government control of industry. 3 s.h. (w) ASSISTANT PROFESSOR HANSON

174. POLITICAL IMPLICATIONS OF ECONOMIC LEGISLATION.—A study of political and sectional alignments in the passage of tariff, farm, railway, New Deal and other economic legislation. 3 s.h. (w) ASSOCIATE PROFESSOR SIMPSON

190. PUBLIC PERSONNEL ADMINISTRATION.—Principles, techniques, problems, and functions of government personnel administration; formal and informal organization for personnel management; comparison of public employment philosophies, policies and services with general personnel management, including recruitment, promotion, training, classification, morale and discipline, compensation, and retirement of public employees. 3 s.h. (E) ASSISTANT PROFESSOR CHEEK

191. STATE AND LOCAL GOVERNMENT TODAY.—Problems in state, county and city government including the administration of government services such as education, public welfare, law enforcement; inter-governmental relationships; administrative reorganization; methods of popular control; and the reconstruction of state and local government so as to meet present-day needs. 3 s.h. (E)
ASSISTANT PROFESSORS CHEEK AND LEACH

207. AMERICAN CONSTITUTIONAL LAW AND THEORY.—A study of leading principles of American government, as developed through judicial interpretation of the Constitution. 3 s.h. (w) PROFESSOR RANKIN

209. PROBLEMS IN STATE AND LOCAL GOVERNMENT IN THE UNITED STATES.—A study of the historical development of state and local governments, their present organization and subdivisions, and their relation to each other. Special attention is given to the position of the states in the federal union through the study of federal-state, inter-state, and state-local relations. 3 s.h. (w)
PROFESSOR RANKIN

230. AMERICAN POLITICAL INSTITUTIONS.—A study of the formation and development of institutions of the national government in the United States, with historical and analytical treatment. Among other topics this course is concerned with the Constitutional Convention of 1787, and the development of Congress, the Presidency, and the Supreme Court. 3 s.h. (w) PROFESSOR RANKIN

234. CIVIL-MILITARY RELATIONSHIPS IN AMERICAN GOVERNMENT.—A consideration of the role of the military in American government both in theory and in practice. Special emphasis will be given to formal civil-military structural arrangements for determining policies, such as the National Security Council, and to the degree of civilian control within the military establishment. 3 s.h. (w)
PROFESSOR CONNERY

241. ADMINISTRATIVE MANAGEMENT.—An advanced course in public administration with special attention being given to the development of scientific management, its application to government in the United States and a consideration of current problems in organization, procedures, work simplification, and management improvement. 3 s.h. (w)
PROFESSOR CONNERY; VISITING ASSOCIATE PROFESSOR WEBB

242. NATIONAL ADMINISTRATION.—A study of the administrative organization, working concepts and procedures of the United States Government, illustrated through the operations of the Bureau of the Budget. 3 s.h. (w)
PROFESSOR CONNERY

246. GOVERNMENT ADMINISTRATION AND PUBLIC POLICY.—Through use of the laboratory and case study techniques, a consideration of the types of administrative problems that the United States Government encounters in the field of public policy, and their possible solution. 3 s.h. (w) PROFESSOR CONNERY

275. THE NATIONAL PARTY SYSTEM.—An intensive examination of selected facets of American national political parties, such as: relationships between

presidential and congressional politics, the politics of national conventions, recent foreign policy and party alignments, and the controversy over party government. 3 s.h. (w) ASSOCIATE PROFESSOR SINDLER

276. COMPARATIVE STATE PARTIES AND POLITICS.—A selective analysis of party patterns in the states, including such topics as: classification schemes for state party systems, the impact of various nominating procedures on party organization, relationships between national and state politics, and the influence of party system on the operation of state government, with special attention to the South. 3 s.h. (w) ASSOCIATE PROFESSOR SINDLER

291. PROBLEMS OF MUNICIPAL GOVERNMENT.—An analysis of problems relating to the structural system and activities of municipalities in the United States. 3 s.h. (w) PROFESSOR RANKIN

292. MUNICIPAL ADMINISTRATION.—A study of principles and methods relating to municipal administration in the United States. 3 s.h. (w) PROFESSOR RANKIN

INTERNATIONAL LAW AND RELATIONS

121. ELEMENTS OF INTERNATIONAL RELATIONS.—Analysis of international politics, of the foundations of national power, and of international cooperation, with emphasis upon attempted solutions of the central problems of international security. 3 s.h. (w) ASSISTANT PROFESSOR PROCTOR

122. MODERN INTERNATIONAL POLITICS.—A survey of politics leading to the two World Wars with emphasis upon present day conditions resulting from these major conflicts. 3 s.h. (w) ASSISTANT PROFESSOR PROCTOR

Students who have received credit for History 135-136 may not receive credit for this course.

131. SURVEY OF FAR EASTERN POLITICS.—An introductory survey of international politics in Eastern Asia and the Western Pacific; the rise of Japan as a modern state; China's struggle for political unity, independence and national development. 3 s.h. (Formerly Political Science 111) (w) PROFESSOR BRAIBANTI

132. CONTEMPORARY PROBLEMS IN FAR EASTERN POLITICS.—The impact of World War II and its aftermath on political institutions and economic structures in the Pacific area. 3 s.h. (Formerly Political Science 112) (w) PROFESSOR BRAIBANTI

158. CONTROL OF AMERICAN FOREIGN POLICY.—A consideration of the forces which are responsible for the formulation of American foreign policy, and a study of the important factors which have influenced contemporary United States policy in the major areas of the world. The course includes an analysis of the respective roles of the President, Congress, Department of State, and the United Nations, as well as military and public opinion. 3 s.h. (w)

212. INTERNATIONAL POLITICS OF THE FAR EAST.—An analysis of the relations of China, Japan, and Korea *inter se* and with outside powers, with emphasis upon changing power relationships within the Asian cultural sphere. 3 s.h. (w) PROFESSOR BRAIBANTI

221. INTERNATIONAL PUBLIC ORGANIZATION.—A study of the structure and functioning of the United Nations organs, of related specialized agencies such as the International Labor Organization, and of regional agencies such as the Organization of American States and the North Atlantic Treaty Organization. 3 s.h. (w) PROFESSOR WILSON

227-228. INTERNATIONAL LAW.—Elements of international law, particularly as interpreted and applied by the United States; rights and duties of states with respect to recognition, state territory and jurisdiction, nationality, diplomatic and consular relations, treaties, treatment of aliens, pacific settlement of disputes, international regulation of the use of force, and collective responsibility. 6 s.h. (w) PROFESSOR WILSON

UNDERGRADUATE SEMINARS

201. SENIOR SEMINAR IN POLITICAL SCIENCE.—A seminar intended primarily for majors in Political Science, devoted to the reading, discussion and analysis of major works in modern and contemporary political science. Students are expected to prepare papers on relevant topics for group discussions. Open only to seniors. Prerequisite: consent of the instructor. 3 s.h. (W) MEMBERS OF THE STAFF

202. SENIOR SEMINAR IN POLITICAL SCIENCE.—Intended primarily for majors in Political Science, this seminar provides an opportunity for the application of principles to current political problems. It provides a means whereby specially qualified students can make a concentrated study of some problem of their own choice. Papers are required and special attention is given to research methods and materials. Political Science 201 is recommended but not required. Open only to seniors. Prerequisite: consent of the instructor. 3 s.h. (W) PROFESSOR CONNERY

DEPARTMENTAL MAJOR

Prerequisite: Political Science 11-12 or 61-62.

Major Requirements: Eighteen semester hours of work in the Department above courses 11-12 or 61-62, including at least nine semester hours of 200 courses.

Related Work: Six hours each in two departments approved by the Political Science adviser. Courses may not be those primarily open to freshmen. Usually related work is taken in the Departments of History, Economics, Sociology, or Philosophy.

The Department offers work leading to graduation with distinction. See the section on Honors.

PSYCHOLOGY

PROFESSOR RODNICK, CHAIRMAN; PROFESSOR KIMBLE, DIRECTOR OF UNDERGRADUATE STUDIES; PROFESSORS ADAMS, COHEN, DAI, KOCH, KUDER, ZENER; ASSOCIATE PROFESSORS BANHAM, DIAMOND, GARMEZY, GUTTMAN, JONES, REICHENBERG-HACKETT; ASSISTANT PROFESSORS ALTROCCHI, BONEAU, BORSTELMANN, BREHM, DASTON, FARINA, LAKIN, MCHUGH, OBRIST, SPIELBERGER; ASSISTANT RESEARCH PROFESSOR GAFFRON; LECTURERS AXELROD, EISDORFER, GEHMAN, SHMAVONIAN; MISS HINMAN

Three or six semester hours in psychology may be used to meet the Social Science and History requirement for the A.B. degree. The courses which will meet the requirement are: Psychology 91 or Psychology 91 plus either Psychology 100 or 101.

Psychology 91 or its equivalent is a prerequisite for all other courses in psychology. Six semester hours in psychology (including Psychology 91) or special permission of the course instructor or the director of undergraduate studies are required for admission to Psychology 143, 144, 145, 146, 148, 205, 212, 215, 236, 265, and 266.

91. INTRODUCTORY PSYCHOLOGY.—An introduction to the facts, principles, and problems of normal adult psychology through a study of psychological methods as applied to motivation, emotions, perception, sensation, thinking, memory, learning, individual differences, and personality. 3 s.h. (E & W) STAFF

100. PERSONALITY AND SOCIAL BEHAVIOR.—A survey of basic psychological principles underlying the study of personality in relation to the social environment. Among the topics discussed are theories of personality, the process of socialization of the individual, factors influencing adjustment to the social environment, the interaction of culture and personality. 3 s.h. (E)

ASSISTANT PROFESSORS ALTROCCHI, MCHUGH, AND SPIELBERGER; ASSOCIATE PROFESSOR JONES

Not open to students who have had Psychology 116.

101. INTRODUCTORY SOCIAL PSYCHOLOGY.—A survey of problems, concepts and methods in the study of social relations and group behavior. Topics

to be discussed include: Psychological and socio-cultural factors in the development of motives, values and attitudes; the study of small-group behavior with emphasis on social influence and communication; prejudice and stereotypy. 3 s.h. (E) ASSOCIATE PROFESSOR JONES; ASSISTANT PROFESSOR BREHM

104. COMPARATIVE PSYCHOLOGY.—An examination of the bearing upon general psychological theory of experimental investigations of animal behavior in the fields of motivation and learning. 3 s.h. (E) PROFESSOR ADAMS

108. INTRODUCTION TO BIOLOGICAL PSYCHOLOGY.—A study of motivation, perception and adaptive behavior, both innate and learned, from the standpoint of the biological sciences. 3 s.h. (E) ASSOCIATE PROFESSOR DIAMOND

110. APPLIED PSYCHOLOGY.—Applications of psychology to problems of personnel selection, industrial efficiency, advertising and selling, and other problems of practical interest. 3 s.h. (E) ASSISTANT PROFESSOR MCHUGH

111. ADVANCED GENERAL PSYCHOLOGY.—A more intensive study of several selected problem areas in the field of general psychology with special emphasis on experimental methods and findings in the areas considered. 3 s.h. (E)
[Not offered in 1960-61.] PROFESSOR KIMBLE

116. PSYCHOLOGY OF ADJUSTMENT.—The course is planned to give an adequate understanding of problems of adjustment and mental hygiene. Lectures and discussions cover an application of the principles and findings of normal and abnormal psychology as these relate to the adjustment of the average individual in our changing society; a survey of the principles of mental hygiene; discussions of current socio-cultural trends significant for individual adjustment. 3 s.h. (E)
ASSOCIATE PROFESSOR REICHENBERG-HACKETT
Not open to students who have had Education 68 or Psychology 100.

117-118. EXPERIMENTAL AND STATISTICAL METHODS IN PSYCHOLOGY.—Study of the procedures and methods of psychological investigation through emphasis on human and animal experimentation in such areas as learning, motivation and perception. Instruction in elementary statistical techniques and their application to the analysis and interpretation of psychological data. Experiments are arranged in a sequence of increasing complexity with respect to subject matter, experimental design and statistical methods. Laboratory and lectures. 8 s.h. (E)
ASSOCIATE PROFESSOR GUTTMAN AND ASSISTANT PROFESSOR BONEAU

121. CHILD PSYCHOLOGY.—A detailed study of the practical problems of infancy and early childhood, with special emphasis upon learning, emotional development, social adjustment, and modern conceptions and methods of child training and guidance. 3 s.h. (E) ASSISTANT PROFESSOR MCHUGH

122. ADJUSTMENT OF THE PRE-SCHOOL CHILD.—Study and application of techniques of observing, recording and interpreting the behavior of the pre-school child. The course is designed to meet the needs of students interested in the personality, development and social adjustment of children; to train them in techniques of observing and interpreting the physical, emotional, and intellectual development of the individual child; the role of each child within the social structure of a play group, and a study of the development of group integration. One hour lecture and 4 hours laboratory. 3 s.h. (E)
ASSOCIATE PROFESSOR REICHENBERG-HACKETT

126. ADOLESCENT PSYCHOLOGY.—The mental, social, and emotional development of adolescence and youth will be studied, with special attention given to such topics as interests, motivations, home problems, sex differences, recreation, delinquency, and development for citizenship. Prerequisite: Psychology 121 or Education 118, or permission of the instructor. 3 s.h. (E)
ASSISTANT PROFESSOR MCHUGH

130. PRINCIPLES AND METHODS OF PSYCHOLOGICAL EVALUATION.—This is an introductory course in test methods used by psychologists in measuring and evaluating mental processes. The nature, purposes and utilization of various types of tests and psychological techniques will be discussed and demonstrated.

Among the tests to be studied will be standard scales of intelligence, verbal and performance, individual and group methods; tests of special abilities, aptitudes, attitudes and interests; personality tests, rating scales and projective methods. 3 s.h. (E) ASSOCIATE PROFESSOR BANHAM

132. THE PSYCHOLOGY OF INDIVIDUAL DIFFERENCES.—A study of the nature and causes of individual and group variations in intelligence, special abilities, social and emotional characteristics. These will be considered in relation to developmental sequence, aging factors, sex, race, biological inheritance, education and socio-economic conditions. 3 s.h. (E) ASSOCIATE PROFESSOR BANHAM

141. PERSONALITY AND BEHAVIOR DISORDER.—Behavior disorder studied from the viewpoint of the psychological principles underlying the adjustment of the deviant personality. Prerequisite: Psychology 100. Not open to students who have had Psychology 106. 3 s.h. (E)
ASSOCIATE PROFESSOR GARMEZY; ASSISTANT PROFESSOR LAKIN

143. LANGUAGE AND COMMUNICATION.—A survey of human language behavior. Topics covered will include basic units of language, language learning, various approaches to the problem of "meaning," and the role of language in human learning and perception. Each student will perform an experimental research project. Prerequisite: 6 hours of psychology or permission of the instructor. 3 s.h. (E) [Not offered in 1960-61.]

144. THE PSYCHOLOGY OF LEARNING.—A survey of the basic facts and principles of human and animal learning. Students in the course will perform an independent experiment. Prerequisite: 6 s.h. in psychology or permission of the instructor or director of undergraduate studies. 3 s.h.
PROFESSOR KIMBLE; ASSISTANT PROFESSOR BONEAU

145. EXPERIMENTAL APPROACHES TO PERSONALITY.—Experimental methods applied to personality research with emphasis upon psychological studies in such areas as anxiety, conflict and frustration. Students will perform a series of representative experiments. Prerequisite: 6 s.h. in psychology or special permission of the instructor or the director of undergradute studies. 3 s.h. (E)
ASSOCIATE PROFESSORS GARMEZY AND JONES; ASSISTANT PROFESSORS BREHM AND SPIELBERGER

148. PSYCHOLOGY OF PERCEPTION AND THINKING.—A study of the basic phenomena of perception and thinking as determined by the stimulus situation, motivation, learning and personality variables. Students will perform a series of representative experiments. Prerequisites: 6 s.h. in psychology or special permission of the instructor or the director of undergraduate studies. 3 s.h. (E)
PROFESSOR ZENER

205. SENSORY DISCRIMINATION.—The anatomy and physiology of the receptors, their pathways to the central nervous system and their central connections. The central question of the course concerns neural mechanisms for discriminating between modalities, qualities within a modality, and differences in intensity and location. 3 s.h. (E) ASSOCIATE PROFESSOR DIAMOND

207, 208. INDEPENDENT STUDY AND RESEARCH.—Independent investigations of topics of special interest. Admission requires formulation of a study plan with a faculty supervisor and approval of the director of undergraduate studies. Prerequisite 9 s.h. of Psychology. Not open to students currently enrolled in Psychology 229, 230. 6 s.h. (E) PROFESSOR KIMBLE AND STAFF

212. PHYSIOLOGICAL PSYCHOLOGY.—A survey of the interrelationships of biological and psychological factors in behavior, with particular reference to reflex action, motivation, learning and emotion. Emphasis will be placed on the relation between psychological theories and biological data. Presupposes Introductory Zoology or its equivalent. Prerequisite: 6 s.h. in psychology or special permission of the instructor or the director of undergraduate studies. 3 s.h. (E)
ASSISTANT PROFESSOR OBRIST

215. DEVELOPMENTAL PSYCHOLOGY.—Theory of personality structure and the changes it undergoes in development from infancy to old age, learning, con-

flict, character, intelligence, developmental crises, etc.; evaluation of researches on personality dynamics. Prerequisite: 6 s.h. in psychology or special permission of the instructor of the director of undergraduate studies. 3 s.h. (E) PROFESSOR ADAMS

229, 230. INTRODUCTION TO RESEARCH.—A senior research seminar for advanced students. The student conducts an original investigation under staff supervision. A formal written report of the study will be required. Group discussions of significant research areas. Prerequisites: Participation by departmental invitation only; restricted to senior majors who have maintained a B average in all psychology courses. Students graduating with distinction in psychology will be selected from among registrants in this course. 6 s.h. (E)
ASSOCIATE PROFESSOR JONES

236. THEORETICAL PSYCHOLOGY.—This course will be devoted to the analysis of techniques of theory construction in psychology. The discussion of these methodological issues will be coordinated with the analysis of concrete formulations in contemporary psychological theory. Prerequisite: 6 s.h. in psychology or special permission of the instructor or the director of undergraduate studies. 3 s.h. (E) PROFESSOR KOCH

242. MEASUREMENT OF APTITUDES, INTEREST AND ACHIEVEMENT.—A study of the theories and principles of psychological measurement as applied to aptitude, interest and achievement testing. Prerequisite: 12 hours of psychology or educational psychology (6 hours of which may be taken concurrently). 3 s.h.
PROFESSOR KUDER

265. FUNDAMENTAL STATISTICAL APPLICATIONS IN PSYCHOLOGICAL RESEARCH.—Introduction to probability and the use of statistics in description and hypothesis testing in psychology including the following applications: correlational techniques, chi-square and t tests, distribution-free tests and one-way analysis of variance. Prerequisite: Psychology 117-118 or equivalent. 3 s.h.
ASSISTANT PROFESSOR BONEAU

266. ADVANCED STATISTICAL APPLICATIONS IN PSYCHOLOGICAL RESEARCH.—The basic theory and applications of analysis of variance techniques to complex experimental designs will be covered. Additional advanced techniques, including factor analysis, will be introduced. Prerequisite: Psychology 265 or equivalent. 3 s.h. ASSISTANT PROFESSOR BONEAU

DEPARTMENTAL MAJOR

Prerequisite: Psychology 91 or equivalent.

Major Requirements: For A.B. degree, 24 semester hours in psychology including: Psychology 91 and 117-118, and at least one course numbered above 140.

For B.S. degree, 24 semester hours in psychology including: Psychology 91, 108, 117-118 and at least two courses numbered above 140.

Related Work: 18 semester hours which may include certain courses in chemistry, economics, education, English, mathematics, philosophy, physics, political science, sociology-anthropology and zoology.

The Department offers work leading to graduation with distinction. See the section on Honors.

RELIGION

ASSOCIATE PROFESSOR PRICE, CHAIRMAN; ASSOCIATE PROFESSOR BRADLEY, DIRECTOR OF UNDERGRADUATE STUDIES; ASSISTANT PROFESSOR SALES, SUPERVISOR OF FRESHMAN INSTRUCTION; ASSOCIATE PROFESSORS HENRY, MANSCHRECK AND PHILLIPS; ASSISTANT PROFESSORS DANIELS, JONES, LANGFORD, AND OSBORN; DR. WINTERMUTE; MISS ROGERS; MESSRS. JAMES AND WILSON

The purpose of the undergraduate program of instruction in religion is to make the student aware of the influence of religion in the history of mankind and in the contemporary world, and to help him appreciate its significance in his own expe-

rience. Attention is centered on the Bible, the history and thought of Christianity, and the development of other religious traditions. In addition to the basic courses designed to fulfill the University requirement in religion, advanced courses are offered to meet the needs of specially interested students. In every case the student is encouraged to consider carefully his own religious convictions, to the end that he may reach a more intelligent understanding of his rôle in the world and of his relation to God.

The uniform course requirement in religion may be met in one of the following ways: (a) by completing, in the freshman year, Religion 1-2; (b) by completing, in the sophomore year or later, Religion 51-52; (c) by completing, in the sophomore year or later, Religion 55 and one other course selected from those numbered 60-99.

Students who have fulfilled the uniform course requirement in religion are eligible to elect any course numbered 100 or above, except those for which additional prerequisites are prescribed. Courses numbered below 100 may not be taken by those who have completed the uniform course requirement in religion.

1-2. THE ENGLISH BIBLE.—A comprehensive survey of the books of the Old and New Testaments. The literature is examined in the light of its origin in the history and religion of the people of the Bible, in order that its theological significance in its own day and in ours may be understood. Open only to freshmen. 6 s.h.
STAFF

51-52. THE ENGLISH BIBLE.—A survey of the Old and New Testaments, similar to Religion 1-2 but adapted to the capabilities of sophomores, juniors, and seniors. Not open to freshmen, or to students who have received credit for Religion 1-2. 6 s.h. STAFF

55. THE RELIGION OF THE BIBLE.—An introduction to the historical and critical study of the Old and New Testaments, which considers the principal persons, events, ideas, and practices contained in the Biblical record, and their significance for the present time. Not open to freshmen, or to students who have received credit for Religion 1-2 or 51-52. 3 s.h.
ASSOCIATE PROFESSORS BRADLEY AND PRICE; ASSISTANT PROFESSOR DANIELS; DR. WINTERMUTE

65. JESUS: THE MAN AND HIS MESSAGE (formerly Religion 114).—A detailed examination of the Gospel records, for the purpose of recovering the person and mission of Jesus. Attention will be given to conceptions of Christ in the history of the Church, and to his contemporary significance. Prerequisite: Religion 55. 3 s.h. ASSOCIATE PROFESSOR PHILLIPS; ASSISTANT PROFESSOR SALES

85. INTRODUCTION TO CHRISTIAN ETHICS (formerly Religion 91).—A brief analysis of the Biblical and historical bases for the Christian understanding of man's moral situation, followed by a study of the social implications of Christianity in such areas of life as marriage, race, the political and economic order, etc. Consideration is given to the relation of Christian ethics to moral philosophy. Prerequisite: Religion 55. 3 s.h. ASSISTANT PROFESSORS LANGFORD AND OSBORN

93. SURVEY OF THE WORLD'S LIVING RELIGIONS.—An introductory course designed to acquaint the student with the problems and methods of the study of world religions. After a brief consideration of religion in primitive culture, the world's living religions are dealt with in terms of historical development and the beliefs, practices, and contemporary importance of each. Prerequisite: Religion 55. 3 s.h. ASSOCIATE PROFESSOR BRADLEY

111. THE PROPHETS OF THE OLD TESTAMENT (formerly Religion 103).—A study of the origin and rise of the prophetic movement, the message of the prophets in their historical setting, the contribution of this movement to the Biblical view of God and history, and the significance of the prophets for today. 3 s.h. ASSISTANT PROFESSOR SALES; DR. WINTERMUTE

120. RELIGIOUS QUESTS OF THE GRECO-ROMAN WORLD.—The religious movements in the Hellenistic age which influenced the rise of Christianity: the various developments in post-exilic Judaism; Persian dualism; the Greek mystery cults; Stoic philosophy; and emperor worship. 3 s.h. ASSISTANT PROFESSOR SALES

121. THE MISSION AND MESSAGE OF JESUS (formerly Religion 116).—An analysis and interpretation of the Gospels, designed to afford the student a fuller understanding of Jesus and his mission. Not open to students who have received credit for Religion 65. 3 s.h.

ASSOCIATE PROFESSOR PRICE; ASSISTANT PROFESSOR DANIELS

123. THE LIFE AND LETTERS OF PAUL.—A study of the available sources for the life of Paul, his rôle in the expansion of the Christian movement, the most important aspects of his thought, and his continuing influence. 3 s.h.

ASSISTANT PROFESSOR DANIELS

124. THE EARLY CHURCH FROM PAUL TO IRENAEUS (formerly Religion 94).—Early Christian history through the second century. Special attention is given to Christianity's relation to Rome, and to the developing organization, ministry, and theology of the Church. 3 s.h. ASSISTANT PROFESSOR SALES

131. HISTORY OF CHRISTIANITY FROM THE EARLY CHURCH THROUGH THE REFORMATION.—A study of events, trends, personalities, and interpretations that have shaped Christianity from the time of the early Church through the sixteenth century, intended to acquaint the student with the Christian heritage and to contribute to his understanding of contemporary Christianity. 3 s.h.

ASSOCIATE PROFESSOR MANSCHRECK

133. HISTORY OF CHRISTIANITY SINCE THE REFORMATION.—A study of events, trends, personalities, and interpretations which have shaped Christianity since the Reformation, with emphasis upon those which contribute to an understanding of the contemporary religious situation. 3 s.h.

ASSOCIATE PROFESSOR MANSCHRECK

135. CHRISTIAN BIOGRAPHY.—A study of the development of Christian thought and practice as reflected in the lives and writings of such key persons as Augustine, Luther, and Wesley. 3 s.h. ASSOCIATE PROFESSOR MANSCHRECK

137. PROTESTANTISM IN AMERICA.—A study of representative men, movements, and thought in American Protestantism to 1918. 3 s.h.

ASSISTANT PROFESSOR JONES

138. CONTEMPORARY RELIGIONS IN THE UNITED STATES (formerly Religion 134).—Judaism, Catholicism, and Protestantism are studied with reference to their distinctive beliefs and practices. A comparison is made of common and dissimilar features. 3 s.h. ASSOCIATE PROFESSOR PHILLIPS

140. CHRISTIAN BELIEFS (formerly Religion 192).—An introductory study of important Christian teachings concerning God, Jesus Christ, sin and salvation, etc., intended to serve as a basis for the student's evaluation of his own religious concepts. 3 s.h. ASSISTANT PROFESSOR LANGFORD

144. PROBLEMS OF RELIGIOUS THOUGHT.—A study of the relation of belief in God to various other types of knowledge and experience, such as the research of natural and social scientists and the facts of suffering, human tragedy, and evil. 3 s.h. ASSISTANT PROFESSOR LANGFORD

149. CURRENT INTERPRETATIONS OF CHRISTIANITY.—Contemporary types of Christian thought as seen through the writings of such leading representatives as Karl Barth, John Baillie, Paul Tillich, and Reinhold Niebuhr. 3 s.h.

ASSISTANT PROFESSOR OSBORN

152. CHRISTIANITY AND CONTEMPORARY SOCIAL PROBLEMS (formerly Religion 132).—The Christian's responsibility in relation to existing social, economic, and political conditions, studied in the light of the Bible, social pronouncements of the churches, and the insights of key Christian thinkers of the past and present. 3 s.h. ASSISTANT PROFESSOR OSBORN

156. CHRISTIAN MARRIAGE AND THE FAMILY (formerly Religion 170).—Marriage and the family in American society studied from the Christian perspective. Attention will be given to the teachings of the churches and of psychologists and sociologists concerning courtship and marriage, sex, parent-child relationships, mixed marriages, and divorce. 3 s.h. ASSOCIATE PROFESSOR PHILLIPS

160. CHRISTIAN EDUCATION.—A study of the educational work of the Church, with emphasis upon the philosophy, objectives and functions of Christian education. 3 s.h. ASSISTANT PROFESSOR DANIELS

175. NON-CHRISTIAN RELIGIONS OF THE MODERN WORLD (formerly Religion 182).—An examination of the beliefs of Islam and the religions of India, China, and Japan. Emphasis will be placed upon the sacred literature, world view, history, and cultural and social significance of the principal non-Christian religions. Not open to students who have received credit for Religion 93. 3 s.h. ASSOCIATE PROFESSOR BRADLEY

187. RELIGIOUS VALUES IN CLASSICAL AND EUROPEAN LITERATURE.—A consideration of the religious insights, explicit and implied, in representative writers. 3 s.h. ASSOCIATE PROFESSOR HENRY

201-202. SENIOR SEMINAR IN RELIGION.—Critical research in significant aspects of religion. Prerequisites: Senior standing and permission of the instructor. 6 s.h. ASSOCIATE PROFESSOR MANSCHRECK

228. THE THEOLOGY OF THE GOSPEL AND THE EPISTLES OF JOHN.—A study of the origin of these writings, the provenance of their thought forms and symbolism, their influence on the early Church, and their contemporary significance. Prerequisite: permission of the instructor. 3 s.h. ASSOCIATE PROFESSOR PRICE

235. THE REFORMATION IN THE LIFE AND THOUGHT OF MELANCHTHON.—A study of Reformation thought patterns, trends, and tensions as seen through the work of Philip Melanchthon (1497-1560). Special consideration will be given to other major Reformation figures in relation to Melanchthon. Prerequisite: permission of the instructor. 3 s.h. ASSOCIATE PROFESSOR MANSCHRECK

270. THE RELIGION OF THE HINDUS.—Hinduism studied through its religious literature from the Vedic period to modern times. Attention will center on ways of salvation in philosophical and epic literature, heresies and sects, Muslim influences, and the rôle of religion in modern India. Prerequisite: permission of the instructor. 3 s.h. ASSOCIATE PROFESSOR BRADLEY

DEPARTMENTAL MAJOR

Prerequisite: Completion of the uniform course requirement in religion. (The sequence Religion 1-2 or 51-52 is recommended.)

Major Requirements: Twenty-four semester hours selected as follows:

1. Three hours from 111, 121, 123.
2. Six hours from 124, 131, 133.
3. Three hours from 140, 144, 152.
4. Three hours from 138, 175.
5. Three hours in the Senior year at the 200 level other than 201-202.
6. Six hours elected from the department curriculum.

Related Work: Eighteen semester hours, including a minimum of six hours in each of two departments. There is no restriction in principle as to departments in which related work may be taken. The departmental major adviser will take into consideration the vocational objective of the student and the need to select courses which will strengthen his major work.

The Department offers work leading to graduation with distinction. See the section on Honors in this *Bulletin.*

ROMANCE LANGUAGES

PROFESSOR DAVIS, CHAIRMAN; PROFESSOR DOW, DIRECTOR OF UNDERGRADUATE STUDIES IN FRENCH; ASSOCIATE PROFESSOR FEIN, DIRECTOR OF UNDERGRADUATE STUDIES IN SPANISH; ASSOCIATE PROFESSOR CORDLE, SUPERVISOR OF FRESHMAN STUDIES IN FRENCH; ASSOCIATE PROFESSOR TORRE, SUPERVISOR OF FRESHMAN STUDIES IN SPANISH; PROFESSORS CASTELLANO, JORDAN, PREDMORE, AND WALTON; ASSOCIATE PROFESSOR CHERPACK; ASSISTANT PROFESSORS CASTELLANO, DOW, FLINT, GRANT, MILLER, VINCENT, AND WALKER; DR. BUSH; MESSRS. BARLOW, HARDEE, HOOPER, RIPLEY, SANDBERG, AND STIRES, MRS. BRYAN; MISS KRUMMEL

French 91-92 and Spanish 91-92 are the prerequisites for all elective courses. Some preparation in courses of the 100 level is prerequisite to election of courses above 200, except by special authorization of the department.

Students who, by reason of foreign residence, have had special opportunities in French or Spanish must be classified by the Director of Undergraduate Studies.

FRENCH

1-2. ELEMENTARY FRENCH.—Introduction to simple conversational patterns, elements of grammar, graded readings. 6 s.h. (E & W)
ASSISTANT PROFESSOR GRANT AND STAFF

63-64. INTERMEDIATE FRENCH.—The progressive development of skills in speaking, understanding, and reading. Prerequisite: French 1-2 or two years of high-school French. 6 s.h. (E & W) ASSISTANT PROFESSOR WALKER AND STAFF

91-92. INTRODUCTION TO FRENCH LITERATURE.—Readings from representative French authors. Development of skill in rapid reading correlated with discussion in French of content and ideas. Prerequisite: French 63-64 or equivalent. 6 s.h. (E & W) PROFESSOR WALTON AND STAFF

97. SPOKEN FRENCH.—Intensive instruction in the spoken language: contemporary French prose provides the basis for vocabulary building, and for practice in structural patterns. Does not satisfy the minimum uniform requirement. Limited to 15 students. Prerequisite: French 64. 3 s.h. PROFESSOR DOW

104. THE SIXTEENTH CENTURY.—An introduction to the spirit of the French Renaissance as reflected in the literature of the age of Rabelais and Montaigne, Ronsard and Du Bellay. 3 s.h. (E) ASSISTANT PROFESSOR VINCENT

105. FRENCH COMEDY FROM MEDIEVAL FARCE TO BEAUMARCHAIS.—A study of the comic theater from the beginnings to eighteenth century satire, with special consideration of Molière. The course will trace the development of the French theatrical tradition, with its commentary on human nature and the contemporary scene. 3 s.h. (W) ASSISTANT PROFESSOR WALKER

106. THE WORLDS OF ROUSSEAU.—Studies of Rousseau's conception of the real world (the *Discours*), the ideal world (*Emile* and the *Contrat Social*), the fictional world (*La Nouvelle Héloïse*), and his personal world (the *Confessions* and the *Rêveries*). 3 s.h. (E) ASSOCIATE PROFESSOR CHERPACK

108. THE FRENCH ROMANTIC MOVEMENT.—The impact of the modern world on the French thinkers and great poets of the early nineteenth century. Readings from Rousseau; the eyewitness testimony of Chateaubriand; the lyric poetry of Lamartine, Vigny, Musset, and Hugo. 3 s.h. (W)
ASSISTANT PROFESSOR GRANT

111. FRENCH DRAMA OF THE NINETEENTH CENTURY.—A survey of the French theatre from the Romantic period to the *Théâtre libre*. 3 s.h. (E)
PROFESSOR DOW

112. FRENCH DRAMA OF THE TWENTIETH CENTURY.—Reading of representative plays selected from the works of Bernstein, Maeterlinck, Romains, Sarment, Vildrac, J.-J. Bernard, Claudel, Lenormand, Pagnol, Giraudoux, and Anouilh. 3 s.h. (E) PROFESSOR DOW

127, 128. ADVANCED COMPOSITION AND CONVERSATION.—During the first semester elements of syntax are briefly reviewed, along with constant drill in the conversational idiom. In the second semester, there are exercises in free composition with intensified treatment of pronunciation and diction. 6 s.h. (E)
ASSISTANT PROFESSOR DOW

134. CONTEMPORARY FRENCH LIFE AND THOUGHT.—An introduction to the essential currents in French thought since 1885. Representative literary works are used as a basis for analysis and discussion of the contemporary scene. 3 s.h. (W) ASSOCIATE PROFESSOR CORDLE

213. FRENCH CLASSICISM.—Its initial phase. Readings from Malherbe, Balzac, Voiture, Descartes, Corneille, Molière, and others. 3 s.h. (E)
PROFESSOR WALTON

214. FRENCH CLASSICISM.—Its maturity. Readings from Pascal, Racine, La Fontaine, La Rochefoucauld, Boileau, Bossuet, Madame de Sévigné, La Bruyère, Saint-Simon, and others. 3 s.h. (E) PROFESSOR WALTON

219, 220. OLD FRENCH LANGUAGE AND LITERATURE.—Reading and discussion of representative texts of the Medieval Period accompanied by a study of the evolution of the language. 6 s.h. (E) ASSISTANT PROFESSOR VINCENT

221. THE NINETEENTH CENTURY FRENCH NOVEL.—The initial phrase. The Romantic hero in conflict with society, with special emphasis on the works of Stendhal and Balzac. 3 s.h. (E) ASSISTANT PROFESSOR GRANT

222. THE NINETEENTH CENTURY FRENCH NOVEL.—A continuation of 221. The decline of the individual hero. Flaubert and Zola will receive intensive study. 3 s.h. (E) ASSISTANT PROFESSOR GRANT

227. FRENCH POETRY SINCE THÉOPHILE GAUTIER.—Readings from the principal figures of the Parnassian and Symbolist movements, including Baudelaire, Leconte de Lisle, Heredia, Verlaine, Rimbaud, Mallarmé, Régnier. 3 s.h. (E)
PROFESSOR WALTON

238. ANATOLE FRANCE.—Analysis of the principal phases of his work and its relation to the French tradition. Reading of his poetry, *Le Crime de Sylvestre Bonnard, Thaïs, Le Jardin d'Epicure, Les Dieux ont soif, Le Lys Rouge, L'Ile des Pingouins,* part of *La Vie Littéraire.* 3 s.h. (E) PROFESSOR WALTON

241, 242. FRENCH LITERATURE AND THOUGHT IN THE AGE OF ENLIGHTENMENT.—First semester: The new philosophy and its propagation. Lectures and discussions involving texts by Fontenelle, Montesquieu, Voltaire, Rousseau, Diderot, and others. Second semester: The crisis in literary aesthetics. Readings, lectures, and discussions bearing on the clash between Classicism and new literary orientations. 6 s.h. (E) ASSOCIATE PROFESSOR CHERPACK

245. FRENCH LITERATURE OF THE TWENTIETH CENTURY, 1895-1925. —The metamorphoses of Symbolism (Proust, Gide, Claudel). Extensive readings from the varied works of the three writers. 3 s.h. (E) ASSOCIATE PROFESSOR CORDLE

246. FRENCH LITERATURE OF THE TWENTIETH CENTURY, 1925-1955. —The Existentialist conversion (Malraux, Sartre, Camus). Extensive readings from the varied works of the three writers. 3 s.h. (E) ASSOCIATE PROFESSOR CORDLE

ITALIAN

181-182. ITALIAN.—Intensive introduction to the language. Modern readings. Completion of the second college year of another foreign language will normally be required as a prerequisite. 6 s.h. (E)

SPANISH

1-2. ELEMENTARY SPANISH.—Introduction to simple conversational patterns, elements of grammar, graded readings. 6 s.h. (E & W)
ASSISTANT PROFESSOR MILLER AND STAFF

63-64. INTERMEDIATE SPANISH.—Progressive development of skills in speak-

ing, understanding, and reading. Prerequisite: Spanish 1-2 or two years of high-school Spanish. 6 s.h. (E & W) ASSISTANT PROFESSOR FLINT AND STAFF

91-92. INTRODUCTION TO SPANISH LITERATURE.—Readings from representative Spanish authors. Development of skill in rapid reading correlated with discussion in Spanish of content and ideas. Prerequisite: Spanish 63-64 or equivalent. 6 s.h. (E & W) PROFESSOR CASTELLANO AND STAFF

94. INTRODUCTION TO SPANISH AMERICAN LITERATURE.—Readings from representative Spanish American authors. Development of skill in rapid reading correlated with discussion in Spanish of content and ideas. This course is offered sometimes as an alternate to Spanish 92 and is accepted in fulfillment of major and graduation requirements. 3 s.h. (E & W) PROFESSOR CASTELLANO AND STAFF

97. SPOKEN SPANISH.—Intensive instruction in the spoken language: contemporary Spanish prose provides the basis for vocabulary building, and for practice in structural patterns. Does not satisfy the minimum uniform requirement. Limited to 15 students. Prerequisite: Spanish 64. 3 s.h. PROFESSOR PREDMORE

155. REPRESENTATIVE WRITERS OF SPANISH AMERICAN LITERATURE.—Reading and discussion of major works which illustrate literary trends from the early Colonial period to 1880. 3 s.h. (E) ASSOCIATE PROFESSOR FEIN

156. REPRESENTATIVE WRITERS OF SPANISH AMERICAN LITERATURE.—Study of works which are examples of the principal literary currents after 1880, with particular reference to their relationship to social ideas and problems in the same period. 3 s.h. (E) ASSOCIATE PROFESSOR FEIN

161. SPANISH LITERATURE: OLDER PERIOD.—Reading and interpretation of representative Spanish writers from the beginnings through the Golden Age. 3 s.h. (E) ASSISTANT PROFESSOR MILLER

162. SPANISH LITERATURE: MODERN PERIOD.—Reading and interpretation of representative writers from Romanticism to the present. 3 s.h. (E) ASSOCIATE PROFESSOR TORRE

164. SPANISH CIVILIZATION.—This course is designed to develop an understanding of the Spanish cultural heritage through the study of selected historical, literary, and artistic materials. 3 s.h. (E) ASSISTANT PROFESSOR FLINT

175. PHONETICS AND DICTION.—This course is designed to perfect the student's pronunciation and to improve his diction. Use is made of the tape recordings for practice and for corrective purposes. Prerequisite: Spanish 71, 72, or permission of the instructor. 3 s.h. (E) PROFESSOR CASTELLANO

176. ADVANCED CONVERSATION.—This course is designed to develop facility of expression through constant drill on vocabulary and conversational idiom. Time will be devoted to a review of the essentials of Spanish syntax. Prerequisite: Spanish 175 or permission of the instructor. 3 s.h. (E) PROFESSOR CASTELLANO

255. MODERN LATIN AMERICAN LITERATURE.—The coming of age of Latin American literature in the nineteenth and twentieth centuries, with particular attention to the Modernist movement. 3 s.h. (E) ASSOCIATE PROFESSOR FEIN

256. CONTEMPORARY LATIN AMERICAN LITERATURE.—Trends in Latin American literature after the Modernist movement. Analysis of significant works in various genres. 3 s.h. (E) ASSOCIATE PROFESSOR FEIN

257. OLD SPANISH LANGUAGE.—The historical development of the language together with illustrative readings. 3 s.h. (E) PROFESSOR DAVIS

258. OLD SPANISH LITERATURE.—The literature of the Middle Ages and the early Renaissance. 3 s.h. (E) PROFESSOR DAVIS

260. ADVANCED COMPOSITION AND SYNTAX.—Study of fundamental difficulties in the language; practice in writing idiomatic Spanish; exercises in free composition. For students who have a satisfactory command of Spanish grammar and fair conversational ability. Prerequisites: Spanish 175, 176, or permission. 3 s.h. (E) PROFESSOR CASTELLANO

261. NINETEENTH CENTURY NOVEL.—A study of literary and social trends in the last half of the nineteenth century. Readings will be selected from the novels of Valera, Pereda, Galdós, Pardo Bazán, Blasco Ibáñez, and their contemporaries. 3 s.h. (E) PROFESSOR DAVIS

264. MODERN AND CONTEMPORARY SPANISH THEATRE.—A brief review of the modern and contemporary Spanish theatre from the period of Romanticism. Lectures, reading, and discussion of the most representative works of Benavente, Martínez Sierra, los hermanos Quintero, etc. 3 s.h. (E)
PROFESSOR CASTELLANO

265. GOLDEN AGE LITERATURE: CERVANTES.—The life and thought of Cervantes with special emphasis on his *Quijote*. 3 s.h. (E) PROFESSOR PREDMORE

266. GOLDEN AGE LITERATURE: THE DRAMA.—Study of the chief Spanish dramatists of the seventeenth century with readings of representative plays of this period. 3 s.h. (E) PROFESSOR CASTELLANO

275. CONTEMPORARY SPANISH LITERATURE: ESSAY AND LYRIC POETRY.—A study of the revision of national values and literary expression in the twentieth century with particular reference to the crisis of 1898 and to the enrichment of the Spanish tradition through extrapeninsular influences. 3 s.h. (E)
PROFESSOR PREDMORE

276. CONTEMPORARY SPANISH LITERATURE: NOVEL.—A study of tradition and innovation in the twentieth century Spanish novel with emphasis on the novels of Unamuno, Baroja, Valle Inclán, and Pérez de Ayala. 3 s.h. (E)
PROFESSOR PREDMORE

THE TEACHING OF ROMANCE LANGUAGES

RL218. THE TEACHING OF ROMANCE LANGUAGES.—Evaluation of objectives and methods; a study of the practical problems involved in teaching these languages on the elementary, secondary, and college level; analysis of textbooks, special foreign language programs, audio-visual aids; critical examination of modern techniques in written and oral testing. 3 s.h. (E) PROFESSOR DOW

DEPARTMENTAL MAJOR

Prerequisites:

For French: French 91-92 or equivalent.

For Spanish: Spanish 91-92 or equivalent.

Major Requirements:

For French: A minimum of eighteen semester hours of work must be completed in courses numbered above 100 and must include: (a) six semester hours in courses 127, 128; (b) six semester hours of literature in courses numbered above 200.

For Spanish: A minimum of eighteen semester hours of work must be completed in courses numbered above 100 and must include: (a) six semester hours of (courses 175, 176, 260); (b) six semester hours of literature in courses numbered above 200.

RELATED WORK

Majors in Romance Languages will select, with approval of the Director of Undergraduate Studies, appropriate courses from the following fields: (1) other languages and literatures; (2) history; (3) philosophy; (4) appreciation courses in music and art; and occasionally from other fields deemed suitable.

RUSSIAN

ASSISTANT PROFESSOR JEZIERSKI; MR. KRYNSKI

1-2. INTRODUCTION TO THE RUSSIAN LANGUAGE.—Fundamentals of Russian grammar, graded readings, aural comprehension, introduction to the spoken tongue. 6 s.h. (w) STAFF

63-64. INTERMEDIATE RUSSIAN LANGUAGE.—Rapid review of fundamentals, detailed study of problems in grammar, vocabulary building, development of

rapid reading skills, practice in composition and spoken Russian. Prerequisite: Russian 1-2, or equivalent. 6 s.h. (w) STAFF

91-92. ADVANCED RUSSIAN.—Systematic study of syntax and style in the written and spoken language. Readings of nineteenth and twentieth century authors. Oral and written reports. Conducted partly in Russian. Prerequisite: Russian 63-64, or equivalent. 6 s.h. (w)
ASSISTANT PROFESSOR JEZIERSKI

101, 102. RUSSIAN LITERATURE AND CULTURE THROUGH THE NINETEENTH CENTURY.—Russian prose, poetry and criticism, with special attention to more recent periods. Readings (from *The Igor Tale* to Blok) in English. Lectures and class discussions. 6 s.h. (w) ASSISTANT PROFESSOR JEZIERSKI

103. SOVIET LITERATURE AND CULTURE.—Literature since 1917, as a continuation of nineteenth-century traditions and as a response to Soviet ideology. Readings (in English) from major works of prose, poetry and drama. 3 s.h. (w)
MR. KRYNSKI

105. THE RUSSIAN THEATER AND DRAMA.—Russian drama from its beginnings to contemporary practice. Lectures, class discussions, readings of plays (Pushkin to Majakovskij) in English. 3 s.h. (w) ASSISTANT PROFESSOR JEZIERSKI

112. PUSHKIN AND THE BIRTH OF RUSSIAN REALISM.—An intensive study of the works of Russia's greatest poet. Readings in English or Russian. Prerequisite: Russian 101 or instructor's consent. 3 s.h. (w)

201, 202. THE NOVELISTS OF NINETEENTH CENTURY RUSSIA.—Development of the Russian novel against the European background, with emphasis on Dostoevskij and Tolstoj. Extensive readings in English or Russian. Lectures, oral reports, class discussions and term paper. 6 s.h. (w)
ASSISTANT PROFESSOR JEZIERSKI

DEPARTMENTAL MAJOR

Prerequisite: Russian 1-2.

Major Requirements: Russian 63-64 and 18 semester hours in the department including 91-92 and at least 6 semester hours of senior-graduate courses.

Related Work: 18 semester hours chosen with the approval of the department from the humanities, history and the social sciences.

SOCIOLOGY AND ANTHROPOLOGY

PROFESSOR MCKINNEY, CHAIRMAN; ASSOCIATE PROFESSOR ROY, DIRECTOR OF UNDERGRADUATE STUDIES; PROFESSORS LABARRE AND THOMPSON; ASSOCIATE PROFESSORS BACK, KERCKHOFF, PREISS, AND SMITH; ASSISTANT PROFESSORS SHAW, SIMPSON, TURK, AND WHITRIDGE; DRS. BROWN AND VANDER ZANDEN

91-92. GENERAL SOCIOLOGY.—An introduction to the scientific study of social life; its origin, evolution and organization as illustrated in the study of a number of concrete social problems. 6 s.h. (E & W) STAFF

93. GENERAL ANTHROPOLOGY.—Origins and distribution of mankind; a survey of human palaeontology and human biology, world archaeology, prehistory and languages; and the origins of the family, primitive economics, arts, social and political organization. Special attention is given to primitive peoples. 3 s.h. (w) PROFESSOR LABARRE

94. CULTURAL ANTHROPOLOGY.—A study of the dynamics of culture, the causal factors, functions, integration and disintegration, diffusion, growth and change of cultures. Emphasis is upon the simpler societies. 3 s.h. (w)
PROFESSOR LABARRE

101. GENERAL SOCIOLOGY.—A more intensive version of course 91-92, which enables the student to complete the introductory course in sociology in one semester. 5 s.h. (w) STAFF

131. PEOPLES OF THE WORLD: AMERICAN INDIAN.—A comprehensive survey of the Indians of North and South America, including a study of origins and prehistory, archaeology, physical anthropology, languages, material culture, social and political organization, economics and religion, discussed in terms of the "culture area" concept. 3 s.h. (Formerly 103) (W) PROFESSOR LABARRE

135. PEOPLES OF THE WORLD: AFRICA, ASIA, AND OCEANIA.—A comprehensive survey of non-European peoples of the Old World, covering available prehistory, archaeology, racial affiliations, languages, material culture, social and political organization, economics and religion, discussed in terms of the "culture area" concept. 3 s.h. (Formerly 105) (W) PROFESSOR LABARRE

142. THE SOCIOLOGY OF MASS COMMUNICATION.—An analysis of the role of radio, the press, magazines, movies and television in modern societies. An examination of the selective audiences, content characteristics, controlling elements, and organizational structure of the various media of mass communication. 3 s.h. (W) ASSOCIATE PROFESSOR SMITH

145. URBAN SOCIOLOGY.—Using historical, demographic, and ecological materials for background, urban society is studied with respect to its institutions, interactional patterns, differentiation, integration, disorganization, and decentralization. 3 s.h. (Formerly 235) (W) ASSOCIATE PROFESSOR SMITH

146. INDUSTRY AND SOCIETY.—A study of industrial institutions in their interrelationships with other forms of social behavior in the broad cultural setting of western civilization. Attention will center upon analysis of specific social problems resulting from the impact of industrial change. 3 s.h. (Formerly 266) (W) ASSOCIATE PROFESSOR ROY

150. THE FAMILY.—Analysis of the American family as an institutionalized group and its relationship with other institutions and structural features such as social class and ethnic group. Special attention is devoted to methods of research in this area. 3 s.h. (Formerly 250) (W) ASSOCIATE PROFESSOR KERCKHOFF

153. SOCIOLOGY OF THE SOUTH.—The developing regional organization of the world economy studied with especial reference to Southern life. A survey of the composition and distribution of population, races and race relations. Primary emphasis is upon social change. 3 s.h. (Formerly 133) (W) PROFESSOR THOMPSON

154. THE SOCIOLOGY OF THE ARTS.—An analysis of the social relations of the world of the arts (painting and sculpture, music, and literature) with emphasis upon creative artists, art publics, art organizations and art works as they function in their social-cultural milieux. 3 s.h. (E) ASSISTANT PROFESSOR WHITRIDGE

155. INTRODUCTION TO INDUSTRIAL SOCIOLOGY.—An analysis and appraisal of the various factors that affect human relations in industry. The interpersonal and intergroup relationships within the individual industrial unit which determine its efficiency as an economic and social institution and the social conditions in the community as they affect social relations. 3 s.h. (Formerly 165) (W) ASSOCIATE PROFESSOR ROY

159. THE NEGRO IN AMERICA.—A study of the history and changing status of the Negro regarded as a symbol and protagonist of minority groups in America and elsewhere. 3 s.h. (Formerly 137) (W) PROFESSOR THOMPSON

171. PUBLIC OPINION AND PROPAGANDA.—Relations among the concepts of public communication, culture, and social organization are analyzed. The influence of interest groups, elites, mass media, and personal contacts on opinion formation is examined. Methods of opinion-research and analysis of propaganda content are discussed. 3 s.h. (Formerly 246) (W) ASSISTANT PROFESSOR TURK

172. COLLECTIVE BEHAVIOR AND SOCIAL MOVEMENTS.—Examination of disruptive and relatively unorganized aspects of social phenomena such as crowd behavior, fads, rumors, crazes and social movements as indexes of social disequilibrium and potential sources of social change. 3 s.h. (Formerly 243. Social Attitudes and Collective Behavior) (W) ASSOCIATE PROFESSOR KERCKHOFF

191. PRINCIPLES OF SOCIAL CASE INVESTIGATION.—A non-professional course designed to acquaint the student with the basic research techniques employed in the case study of the interrelationships of personality and culture in various fields of sociological and anthropological interest. 3 s.h. (E)
ASSISTANT PROFESSOR WHITRIDGE

192. INTRODUCTION TO STATISTICAL PROCESSES.—A non-mathematical, general introduction to the logic of statistical inference employing sociological data. Principles of large sample theory; normal, binomial, and chi square sampling distributions; simple probability; and nonparametric alternatives are considered. 3 s.h. (W)
ASSISTANT PROFESSOR SHAW

232. PRIMITIVE RELIGION.—The ethnography, the social functions, and the sociopsychological meanings of religion in primitive societies. 3 s.h. (Formerly 212) (W)
PROFESSOR LABARRE

234. PERSONALITY AND SOCIETY.—The sociology and social psychology of human personality, its origins in the primary group, its nature and varieties and its integrations into secondary group institutions. 3 s.h. (Formerly 213) (W)
PROFESSOR LABARRE

236. PERSONALITY AND CULTURE.—The influence of culture patterns and social institutions upon character structure, socialization of the individual, and the dynamics of human personality. Comparative anthropological materials will be drawn upon. Prerequisite: Course 234. 3 s.h. (Formerly 214) (W)
PROFESSOR LABARRE

241. SOCIAL STRATIFICATION.—The nature of hierarchical and vertical differentiation in the economic, political and prestige structures in modern societies. The interrelationship of class, status and power strata and their influence on social institutions, personality structure, and group and individual behavior. 3 s.h. (W)
ASSOCIATE PROFESSOR ROY

242. THE SOCIOLOGY OF OCCUPATIONS AND PROFESSIONS.—The social significance of work. Analysis of forces changing the contemporary occupational structure, typical career patterns of professions and occupations, the social organization of occupational groups. 3 s.h. (Formerly 158) (W)
PROFESSOR MCKINNEY

247. COMMUNITY AND SOCIETY.—This course seeks to provide a frame of reference for the analysis and ordering of facts pertaining to the diverse cultures of the world, the State, the world community, the Great Society, news, mass behavior, social problems, races and classes. 3 s.h. (Formerly 237) (W)
PROFESSOR THOMPSON

253. SOCIAL INSTITUTIONS.—The study of particular institutions and the social movements out of which they developed, with emphasis on the development of general propositions concerning the nature, function and importance of institutions in society. 3 s.h. (W)
PROFESSOR THOMPSON

255. RACE AND CULTURE.—A comparative study of race relations in world perspective developed around such themes as race and personal identity, the geography and ecology of race relations, the idea of race, and race conflict. 3 s.h. (Formerly 238) (W)
PROFESSOR THOMPSON

275. SOCIAL ATTITUDES AND INDIVIDUAL BEHAVIOR.—The importance of symbolic interaction, the development of the "self," the social structuring of the socialization process, individual movement within the social structure, and the importance of membership groups and reference groups. 3 s.h. (W)
ASSOCIATE PROFESSOR KERCKHOFF

281. DEVELOPMENT OF SOCIOLOGICAL THEORY.—An analysis of the development, convergence and utilization of sociological theory. Prerequisite, 15 s.h. credit in sociology. 3 s.h. (W)
PROFESSOR MCKINNEY

282. PRINCIPLES OF SOCIOLOGICAL ANALYSIS.—An advanced course in general sociology designed to give a systematic conception of social order, focusing on its structural components and the functions they serve. Undergraduates must

have at least 15 s.h. and a B average in sociology and have the permission of the instructor. 3 s.h. (w) PROFESSOR THOMPSON

290-291. METHODS OF SOCIOLOGICAL RESEARCH.—Issues involved in establishing and testing scientific propositions; the nature and relationship of concepts, hypotheses, theories and laws; and general principles of research design. Techniques, such as sampling, observation, interviewing, data processing and analysis are learned through study and practice. This is a professional course intended primarily for graduate majors. Undergraduates who have at least 15 s.h. and a B average in sociology may be admitted by permission of the instructor. 6 s.h. (w) ASSOCIATE PROFESSOR SMITH

296, 297. STATISTICAL ANALYSIS IN SOCIOLOGY.—Such techniques as zero and higher order linear and curvilinear correlation, partial correlation, analysis of variance and covariance and factorial design are studied. Where possible, analogous non-parametric techniques are also considered. Prerequisite: 192 or its equivalent, 296 is prerequisite to 297. Undergraduates must have at least 15 s.h., a B average in sociology and obtain the permission of the instructor. 6 s.h. (w) ASSOCIATE PROFESSORS KERCKHOFF AND SMITH

DEPARTMENTAL MAJOR

Prerequisite: Sociology 91-92 or 101.

Major Requirements: Eighteen semester hours of work in the Department in addition to Sociology 91-92 or 101, including at least six semester hours in Senior-Graduate courses.

Related Work: A minimum of eighteen semester hours, at least twelve of which are normally chosen from two of the following fields: economics, education, history, political science and psychology. Additional courses in health education, philosophy and religion may also be elected as related work when indicated by the educational requirements of the student and approved by the departmental adviser. But not more than six hours work in courses primarily open to Freshmen may be counted toward this requirement.

ZOOLOGY

PROFESSOR WILBUR, CHAIRMAN; ASSOCIATE PROFESSOR ROBERTS, DIRECTOR OF UNDERGRADUATE STUDIES; ASSOCIATE PROFESSOR HUNTER, SUPERVISOR OF FRESHMAN INSTRUCTION; PROFESSORS BOOKHOUT, GRAY, GREGG, HORN, AND K. SCHMIDT-NIELSEN; ASSOCIATE PROFESSORS BAILEY, FLUKE, AND LIVINGSTONE; ASSOCIATE RESEARCH PROFESSOR B. SCHMIDT-NIELSEN; ASSISTANT PROFESSORS COSTLOW, KLOPFER, SANDEEN, VERNBERG, AND WARD; INSTRUCTORS FUNDERBURG, LARKIN, KENNY, AND SHARER

1. ANIMAL BIOLOGY.—The principles of biology as applied to animals. 4 s.h. (w & e) ASSISTANT PROFESSORS KLOPFER AND SANDEEN, AND STAFF

2. GENERAL ZOOLOGY.—A brief survey of the animal kingdom. Prerequisite: Zoology 1. 4 s.h. (w & e)
PROFESSOR BOOKHOUT; ASSOCIATE PROFESSOR HUNTER; AND STAFF

53. COMPARATIVE VERTEBRATE ANATOMY.—A study of the anatomy and evolution of the organ systems of vertebrates. Prerequisites: Zoology 1, 2. 4 s.h. (w)
PROFESSOR HORN AND STAFF

71. HEREDITY AND EUGENICS.—Effects of environment and heredity upon the individual and populations; interpretation of human genetic histories. Prerequisite: one year of zoology. 3 s.h. (w) ASSISTANT PROFESSOR WARD

92. GENERAL EMBRYOLOGY.—An introduction to the study of developmental processes. Prerequisite: Zoology 1-2; Chemistry 1, 2. 4 s.h. (w)
PROFESSOR GREGG AND STAFF

109. EVOLUTION.—The facts and theories of organic evolution. Prerequisite: Genetics or consent of the instructor. 3 s.h. (w) ASSISTANT PROFESSOR KLOPFER

110. INTRODUCTION TO GENETICS.—The principles and practical applications of genetics as applied to animals. (Primarily for majors in zoology.) Prerequisite: two years of zoology or consent of instructor. 4 s.h. (w)
ASSISTANT PROFESSOR WARD

120. ORNITHOLOGY.—Lectures, laboratory and field trips dealing with the classification, adaptations, and natural history of birds. Prerequisite: one year of zoology. Zoology 53 recommended. 4 s.h. (w) ASSOCIATE PROFESSOR BAILEY

151. PRINCIPLES OF PHYSIOLOGY.—An introductory survey of physiological functions. Prerequisites: At least a year of zoology and a year of chemistry. 4 s.h. (w) PROFESSOR SCHMIDT-NIELSEN

156. VERTEBRATE HISTOLOGY.—The miscroscopic structure of normal tissues and organs of the vertebrate body. Training will be given in the preparation of material for microscopic study. Prerequisite: Two years of zoology. 4 s.h. (w)
ASSOCIATE PROFESSOR ROBERTS

161. ANIMAL PARASITES.—An introductory course dealing with biological principles involved in parasitism of animals including man. Prerequisite: one year of zoology. 4 s.h. (e) ASSOCIATE PROFESSOR HUNTER

196. SEMINAR: CURRENT DEVELOPMENTS IN ZOOLOGY.—Open to senior departmental majors. 2 s.h. (w) STAFF

FOR SENIORS AND GRADUATES

201. ANIMAL BEHAVIOR.—A reveiw of the major developments in the field with emphasis on recent physiological and developmental studies. Prerequisites: Physiology, Genetics and Evolution, or permission of instructor. 3 s.h.
ASSISTANT PROFESSOR KLOPFER

203. ECOLOGY.—Relation of animals to environment. Lectures, readings, reports, conferences; laboratory and field work. Prerequisites: at least two years of zoology. 4 s.h. PROFESSOR GRAY

204. ADVANCED PARASITOLOGY.—Lectures, readings, and laboratory work dealing with practical and theoretical problems of classification, morphology and host relations of animal parasites. Offered in alternate years. Prerequisite: Zoology 161 or equivalent; or permission of instructor. 4 s.h. (e)
ASSOCIATE PROFESSOR HUNTER

210. EXPERIMENTAL GENETICS.—The relationship of phenotype to genome and environment; cytogenetics, recent research in the field of genetics. Laboratory. Prerequisites: Principles of heredity (one of the following: Zoology 110, Botany 101, 202, or equivalent), or consent of instructor. 4 s.h. ASSISTANT PROFESSOR WARD

216. LIMNOLOGY.—A study of lakes, ponds and streams, including their origin, development, geochemistry, energy balance, productivity and the dynamics of plant and animal communities living in them. Lectures, field trips and laboratory work. Usually offered in alternate years. Prerequisites: Chemistry 1, 2; Physics 1, 2; Mathematics 51; and one year of biology; or permission of instructor. 4 s.h. (w)
ASSOCIATE PROFESSOR LIVINGSTONE

219, 220. SPECIAL PROBLEMS.—Senior majors who have had proper training may be permitted to carry on special work. Permission must be obtained from the Director of Undergraduate Studies and the instructor under whom the student wishes to work. Not more than 4 s.h. may be counted toward major work. (w & e)
STAFF

222. ENTOMOLOGY.—A study of anatomy, physiology, embryology, and classification of insects. Prerequisite: One year of zoology. 4 s.h. (w) PROFESSOR GRAY

224. VERTEBRATE ZOOLOGY.—A study of life histories, adaptations, ecology and classification of vertebrate animals. Offered in alternate years. Prerequisite: Zoology 53. 4 s.h. (w) ASSOCIATE PROFESSOR BAILEY

228. EXPERIMENTAL EMBRYOLOGY.—Lectures, readings, reports, and laboratory work. Prerequisites: Zoology 53, 92, 271, or equivalent. 4 s.h.
PROFESSOR GREGG

238. SYSTEMATIC ZOOLOGY.—The fundamental theory and practice involved in the collection, identification, and classification of animals. Offered in alternate years. Prerequisites: Zoology 1, 2 and permission of instructor. 4 s.h. (w)
ASSOCIATE PROFESSOR BAILEY

243. CYTOLOGY.—The structure of the cell. Lectures, readings, reports, and laboratory work. Prerequisites: 2 years of biology, 1 year of chemistry, and permission of instructor. 4 s.h. ASSOCIATE PROFESSOR ROBERTS

245. RADIATION BIOLOGY.—An introductory course which deals with the basic physical, chemical, and biological principles upon which the study of the biological effects of radiation is based. Laboratory work and lectures. Usually offered in alternate years. Prerequisites: Mathematics through trigonometry, college physics, inorganic and organic chemistry. 4 s.h. (w)
ASSOCIATE PROFESSOR FLUKE

249. PHYSIOLOGY OF INVERTEBRATE EFFECTORS, RECEPTORS AND COORDINATION.—A study of sense organs, endocrine and nervous mechanisms, muscles, chromatophores and other effectors in selected invertebrate animals. Lectures, reports and laboratory. Prerequisite: 2 years of zoology, 1 year of chemistry, 1 year of physics (may be taken concurrently). 4 s.h.
ASSISTANT PROFESSOR SANDEEN

252. COMPARATIVE PHYSIOLOGY.—The physiological mechanisms of animals studied on a comparative basis. Prerequisite: Zoology 151 or equivalent. 4 s.h. (w)
PROFESSOR K. SCHMIDT-NIELSEN

253. ADVANCED VERTEBRATE MORPHOLOGY.—Descriptive and experimental studies in comparative vertebrate morphogenesis. Lectures, readings, reports and laboratory. Usually offered in alternate years. Prerequisites: Zoology 53, 92. 4 s.h. (w) PROFESSOR HORN

271. CELLULAR PHYSIOLOGY.—The physiological processes of living matter approached through studies of cells and tissues. Prerequisites: 3 semesters of biology and Chemistry 151, or consent of the instructor. 4 s.h. (w)
PROFESSOR WILBUR; ASSOCIATE RESEARCH PROFESSOR B. SCHMIDT-NIELSEN

274. INVERTEBRATE ZOOLOGY.—A study of structure, functions, and habits of invertebrate animals under normal and experimental conditions. Field trips will be made to study, collect, and classify animals in their natural habitats. Offered in alternate years. Prerequisites: Zoology 1, 2. 4 s.h. (w) PROFESSOR BOOKHOUT

276. PROTOZOOLOGY.—The morphology, physiology, taxonomy, and culture of protozoa. Offered in alternate years. Prerequisites: Zoology 1, 2. 4 s.h. (w)
PROFESSOR BOOKHOUT

278. INVERTEBRATE EMBRYOLOGY.—Lectures, readings and laboratory work dealing with rearing, life history and development of invertebrates. Offered in alternate years. Prerequisite: Two years of Zoology. 4 s.h. (w)
PROFESSOR BOOKHOUT

MARINE LABORATORY. The following courses are given at Duke University Marine Laboratory, Beaufort, N. C.: S203, Marine Ecology; S204, Marine Parasitology; S214, Oceanography; S250, Physiological Ecology of Marine Animals, S274, Marine Invertebrate Zoology. Consult the announcement of the Duke University Marine Laboratory.

DEPARTMENTAL MAJOR

Prerequisites: Zoology 1 and 2.

Major Requirements (for both A.B. and B.S. degrees): A minimum of 24 s.h. of zoology including at least one course in two of the following three areas: morphology (53, 92, 156, or 278), physiology (151 or 271), and genetics (71 or 110).

Related Work:

A.B. Degree: Related work will include at least one year of chemistry with

additional work usually chosen from courses in botany, chemistry, geology, mathematics, or physics. The language requirement will be met by French, German, or Russian.

B.S. Degree: Related work will include chemistry 151 and 152 with additional work chosen from courses in botany, geology, mathematics, or physics. Language requirements may be met by two languages, chosen from German, French, and Russian.

The Department offers work leading to graduation with distinction. See the section on Honors.

College of Engineering

CIVIL ENGINEERING

PROFESSOR ROWE, CHAIRMAN; PROFESSOR WILLIAMS; ASSOCIATE PROFESSORS GARDNER AND PALMER; ASSISTANT PROFESSORS ARGES, HAINES, HARRAWOOD AND THARP; DRS. KUMAR AND OKUN; MESSRS. FU, HOLLAND, MIRZA, MOLINA, SERINKEN, AND UNAL

CE 61. PLANE SURVEYING.—Use and adjustment of instruments; transit-tape, stadia, and plane table surveying; differential and profile leveling; calculation of bearings, latitudes, departures, and areas; accuracy and errors; topographic mapping; rural and urban land surveys; celestial observations for azimuth; triangulation; introduction to photogrammetry. Prerequisites: Engrg. 1 and Math 21. 5 s.h. (w) ASSISTANT PROFESSOR THARP

CE 72. MATERIALS LABORATORY I.—Blending of granular materials and determination of their physical properties, design of concrete and bituminous mixtures, consistency limits of soils. 1 s.h. (w) MR. HOLLAND

CE 101. MATERIALS LABORATORY II.—Testing of soils, concrete, and bituminous mixtures. Mechanical analyses, compaction, consolidation, triaxial, and stability tests, analysis of test results. Prerequisite: CE 72; concurrent: Engrg. 107. 1 s.h. (w) ASSOCIATE PROFESSOR GARDNER

CE S110. PLANE SURVEYING.—Use and adjustment of instruments; transit-tape, stadia, and plane table surveying; differential and profile leveling; calculation of bearings, latitudes, departures, and areas; accuracy and errors; mapping; celestial observations for azimuth; triangulation. Prerequisite: trigonometry; engineering graphics desirable. 4 s.h. (w) ASSISTANT PROFESSOR THARP

CE 113. ROUTE SURVEYING.—Simple, compound, and reverse curves; parabolic curves; spirals; earthwork and grading plans; route location and selected problems in design. Prerequisite: CE 61. 3 s.h. (w) PROFESSOR WILLIAMS

CE 116. HIGHWAY ENGINEERING.—Location, design, construction and maintenance of highways and city streets; soil stabilization; traffic studies; economics of planning and design. Prerequisite: CE 113, 135. 3 s.h. (w) PROFESSOR WILLIAMS

CE 118. MATERIALS OF ENGINEERING.—Behavior of materials under load; mechanical properties as criteria for failure; elementary metallurgy. Ferrous and non-ferrous metals, timber, plastics, stone and clay products. Prerequisite: Engrg. 107 and 109. 2 s.h. (w) ASSISTANT PROFESSOR ARGES

CE 121. *HYDROLOGY.—Fundamentals of meteorology; precipitation; evaporation. Ground water development. Stream flow and stream gaging. Hydrograph

* Offered only upon sufficient demand; enrollment limited.

analysis. Flood routing. Field trips to be arranged. Prerequisite: Engrg. 128. 3 s.h. (w) PROFESSOR WILLIAMS

CE 123. HYDRAULIC ENGINEERING.—Pipe flow, compound pipe systems, network analysis, analysis and problems on pumps and turbines, fundamental aspects of hydrology. Open channel flow, non-uniform flow computations. Irrigation and drainage problems. Flood control and hydraulic structures. Prerequisite: Engrg. 128. 3 s.h. (w) PROFESSOR WILLIAMS

CE 124. SANITARY ENGINEERING.—Public health and engineering aspects of water supply and waste disposal. Population estimation, storage requirements, supply and collection systems. Water and waste treatment, laboratory analyses and interpretation of results. Prerequisite: CE 123, Chemistry 2. 3 s.h. (w) DR. OKUN

CE 131. STRUCTURAL MECHANICS I.—Stresses in trusses by algebraic and graphic methods under all conditions of loading. Structural drafting. Prerequisite: Engrg. 107. 3 s.h. (w) ASSOCIATE PROFESSOR GARDNER

CE 132. STRUCTURAL DESIGN I.—Tension, compression, flexural members, eccentric connections, unsymmetrical bending, riveted and welded plate girders, trusses and office building frames. Timber design using ring connectors. Design and detail drawings. Prerequisite: CE 131. 4 s.h. (w) ASSOCIATE PROFESSOR PALMER

CE 133. STRUCTURAL DESIGN II.—Theory and design of reinforced concrete beams, columns, and footings. Analysis and design of arches and bents. Prerequisite: CE 140. 4 s.h. (w) PROFESSOR ROWE

CE 135. SOIL MECHANICS.—Soil identification and classification; elementary soil physics; drainage; exploration; stability of footings and retaining walls; settlement; application of theory to foundation design. Prerequisite: Engrg. 107. 2 s.h. (w) ASSOCIATE PROFESSOR GARDNER

CE 137, 138. SEMINAR.—Students are required to make reports and to talk on current engineering literature or on such other topics as may be assigned. 1-2 s.h. (w) STAFF

CE 140. STRUCTURAL MECHANICS II.—Application of least work, slope deflection, and moment distribution to statically indeterminate structures. Deflection of trusses. Prerequisite: CE 131. 3 s.h. (w) ASSOCIATE PROFESSOR PALMER

CE 143, 144. PROJECTS IN CIVIL ENGINEERING.—This course may be assigned by the Chairman of the Department to certain seniors who have shown an aptitude for research in one distinct field of civil engineering, in which case it may be substituted for certain general civil engineering courses. 2-6 s.h. (w) STAFF

CE 146. PROFESSIONAL ENGINEERING PROBLEMS.—Professional aspects of civil engineering practice. Selected problems in analysis and design, consideration of engineering economy, contracts, specifications, and ethics. Seniors only. 2-3 s.h. (w) ASSOCIATE PROFESSOR PALMER

CE 154. *GEOMETRIC THOROUGHFARE DESIGN.—Analysis and design of municipal street systems. Origin-destination surveys; control of traffic flow; grade, rotary, and grade-separation intersections. Prerequisite: CE 113. 3 s.h. (w) ASSISTANT PROFESSOR THARP

CE 201. *THEORETICAL AND APPLIED MECHANICS.—Introduction to the theory of elasticity, vibrations analysis, and hydrodynamics. (Same course as ME 201.) Prerequitite: permission of instructor. 3 units. (w) PROFESSOR ROWE

CE 202. *ADVANCED MECHANICS OF MATERIALS AND EXPERIMENTAL STRESS ANALYSIS.—The analysis of stress and strain in deformable bodies, correlation of theory with data from experiment. Photoelasticity. Strain gages. Similitude. Prerequisite: permission of instructor. 3 units (w) PROFESSOR ROWE

The Department offers work leading to graduation with distinction. See the section on Honors.

* Offered only upon sufficient demand enrollment limited.

ELECTRICAL ENGINEERING

PROFESSOR VAIL, CHAIRMAN; PROFESSORS SEELEY AND MEIER; ASSOCIATE PROFESSORS ARTLEY, KRAYBILL, OWEN, AND WILSON; ASSISTANT PROFESSOR GEORGE; MESSRS. DORRIS, JONES, MCKEEL, OLIVE, PARKER, PILKINGTON, RATHMELL, STEWART, WOOTEN, AND YOUNG

EE 53. ELECTRICAL ENGINEERING FUNDAMENTALS.—Survey of electrical engineering profession: role of engineering and professional engineering societies in national life; engineering economy; engineering law; technical engineering problems; basic philosophy of engineering education; introduction to staff, curriculum, and facilities of Department of Electrical Engineering. One two-hour session. 1 s.h. (w) ASSOCIATE PROFESSOR KRAYBILL AND MR. OLIVE

EE 55. ELECTRIC CIRCUITS.—Principles of alternating and direct-current electric circuits: physical nature of circuit elements and sources of excitation; volt-ampere relations for elements and sources singly and in simple combination; instantaneous and effective values; algebra of phasors and complex quantities; locus diagrams; Fourier wave analysis; single-phase and polyphase circuits. Prerequisite: Physics 42. Concurrent: Mathematics 63. Three class sessions and one two-hour computation. 4 s.h. (w)
ASSOCIATE PROFESSOR WILSON AND MESSRS. DORRIS AND PILKINGTON

EE 56. ELECTRIC NETWORKS.—Network topology; loop and nodal analysis; duality; transients; Laplace transformation; time and frequency domains; network functions; pole-zero plots; feedback systems. Prerequisite: EE 55. Concurrent: Mathematics 64. Three class sessions and one two-hour computation. 4 s.h. (w)
PROFESSOR VAIL AND MESSRS. DORRIS AND PILKINGTON

EE 109-110. ELECTROMAGNETIC SYSTEMS.—Mathematical and physical consideration of energy relations and forces associated with both discrete particles and materials in electromagnetic fields: vector notation; Maxwell's equations; static and quasi-static fields; energy, power flow, and impedance; particle ballistics; electron emission; control of conduction in vacuums, gases, liquids, and solids; resistance, capacitance, and inductance of systems of conductors; forces between relatively moving bodies; dielectric and magnetic materials. Prerequisite: EE 56. Concurrent: Mathematics 111. Three class sessions and one two-hour computation. 8 s.h. (w) ASSOCIATE PROFESSOR ARTLEY; MESSRS. JONES AND STEWART

EE 111-112. ELECTRICAL PRINCIPALS LABORATORY.—Instruction in electrical laboratory techniques; experimental study of basic principles of electromagnetics, electronics, and electric and magnetic circuits. Prerequisite: EE 56. Concurrent: EE 109-110. Two three-hour laboratory periods throughout first semester; one throughout second semester. 3 s.h. (w)
MESSRS. PARKER, PILKINGTON, RATHMELL, AND WOOTEN

EE 123. FUNDAMENTALS OF ELECTRICAL ENGINEERING.—Introductory treatment of electrical engineering fundamentals for students majoring in other branches of engineering: principles of electric circuits, fields, and electronics. Prerequisites: Mathematics 63 and Physics 42. Concurrent: EE 125. Three class sessions. 3 s.h. (w) ASSOCIATE PROFESSOR KRAYBILL AND MR. MCKEEL

EE 124. INDUSTRIAL ELECTRICAL ENGINEERING.—Introductory treatment of industrial applications of electrical engineering fundamentals for students majoring in other branches of engineering: alternating- and direct-current machinery; electronic and electromagnetic control systems; illumination principles. Prerequisite: EE 123. Concurrent: EE 126. Three class sessions. 3 s.h. (w)
ASSOCIATE PROFESSOR KRAYBILL AND MR MCKEEL

EE 125. ELECTRICAL FUNDAMENTALS LABORATORY.—Laboratory course paralleling course EE 123, with which it should be taken concurrently. One three-hour laboratory. 1 s.h. (w) STAFF

EE 126. INDUSTRIAL ELECTRICAL LABORATORY.—Laboratory course paralleling course EE 124, with which it should be taken concurrently. One three-hour laboratory. 1 s.h. (w) STAFF

EE 127. *ELECTRONICS FOR ENGINEERS.—Introductory treatment of principles and applications of engineering electronics for students majoring in other branches of engineering: amplifiers; feedback; basic communications and control circuits; electronic computers. Prerequisite: EE 123 and permission of instructor. Three class sessions. 3 s.h. (w) MR. YOUNG

EE 159. *TRANSMISSION.—Development of theory underlying transmission of electric energy over conductors at both power and communication frequencies. Two class sessions and one two-hour computation. Prerequisite: EE 110; Mathematics 111. Elective for electrical majors. 3 s.h. (w) PROFESSOR SEELEY

EE 161. *HIGH-VOLTAGE PHENOMENA.—Introductory study of high-voltage phenomena and their engineering application; behavior of gaps and insulators upon application of power-frequency and impulse voltages; corona; properties of insulating materials; high-voltage measurements; elements of high-voltage design. Two class sessions and one three-hour laboratory. Prerequisite: EE 110 and permission of instructor. Elective for electrical majors. 3 s.h. (w) PROFESSOR VAIL

EE 165-166. ELECTRICAL ENGINEERING SEMINAR.—A course in which seniors are required to present oral reports and dissertations on material appearing in current engineering literature. Juniors may participate, but without credit. One class session. 2 s.h. (w) STAFF

EE 171. *FUNDAMENTALS OF ILLUMINATION.—Factors that influence seeing; lighting language, sources, and measuring techniques; basic factors involved in recommended lighting practice. Two class sessions and one two-hour computation. Prerequisite: EE 56 or EE 123, and permission of instructor. Elective. 3 s.h. (w) ASSOCIATE PROFESSOR KRAYBILL

EE 173-174. *PROJECTS IN ELECTRICAL ENGINEERING.—A course which may be undertaken only by seniors who show special aptitude, or who may have had previous experience directly related to the proposed project. The consent of the Chairman of the Department must be obtained before registering. Elective for electrical majors. 3-6 s.h. (w) STAFF

EE 177. *ENERGY TRANSMISSION AND RADIATION.—A more advanced treatment of electromagnetic theory than is afforded by EE 109-110, with particular application to wave guides and antennas. Prerequisite: EE 110 and permission of instructor. Three class sessions. 3 s.h. (w) ASSOCIATE PROFESSOR ARTLEY

EE 179. *ADVANCED ELECTRICAL MEASUREMENTS.—Theory and practice of measurements of electrical quantities at extremes of voltage, current, power, and frequency. Two class sessions and one three-hour laboratory. Prerequisite: EE 110 and permission of instructor. 3 s.h. (w) ASSOCIATE PROFESSOR OWEN

EE 181-182. ELECTRONIC NETWORKS.—Advanced topics in engineering electronics: piece-wise linear approximation for nonlinear operation and incremental models for linear operation of basic electronic circuits; narrow- and wide-band amplifiers; feedback amplifiers; oscillators; modulation and demodulation; microwave devices; communication systems. Prerequisite: EE 110. Concurrent: EE 183-184. Three class sessions. 6 s.h. (w)
ASSOCIATE PROFESSOR OWEN AND ASSISTANT PROFESSOR GEORGE

EE 183-184. ELECTRONICS LABORATORY.—Laboratory course paralleling and integrated with course EE 181-182, with which it should be taken concurrently. One three-hour laboratory. 2 s.h. (w)
MESSRS. DORRIS, JONES, RATHMELL, AND YOUNG

EE 189. *ELECTROMAGNETIC DEVICES.—General concepts and techniques useful in solving problems arising in the design of electromagnetic devices, particularly those employing ferromagnetic materials; relays; saturable reactors; rotating amplifiers; motors and generators. Prerequisite: permission of instructor. 3 s.h. (w) ASSOCIATE PROFESSOR ARTLEY

EE 191-192. ELECTRIC MACHINERY.—Application of circuit and field principles to underlying theory of static and rotating electric machinery: mathematical

techniques for analyzing transformers and electromechanical energy converters as individual devices and when interconnected into systems. Prerequisite: EE 110. Concurrent: EE 193-194. Three class sessions. 6 s.h. (w)
PROFESSOR MEIER AND ASSOCIATE PROFESSOR WILSON

EE 193-194. ELECTRIC MACHINERY LABORATORY.—Laboratory course paralleling and integrated with course EE 191-192, with which it should be taken concurrently. One three-hour laboratory. 2 s.h. (w)
PROFESSOR MEIER, ASSOCIATE PROFESSOR WILSON, AND MR. PARKER

EE 199. *FEEDBACK CONTROL SYSTEMS.—Theory, analysis, design, and operation of servomechanisms, regulators, program controllers, and other feedback controls; electrical, mechanical, hydraulic, aerodynamic, pneumatic, and thermal systems; steady-state and transient solutions; stability criteria and diagrams; linear and nonlinear systems. Two class sessions and one three-hour laboratory. Prerequisite: EE 110 and permission of instructor. Concurrent: EE 191 or EE 192. Elective for electrical majors. 3 s.h. (w) MR. YOUNG

EE 201. *ENERGY SYSTEMS.—General concepts of energy storage, transfer, transformation, and control that are applicable to a wide variety of technical systems, with emphasis on their common mathematical structure: electrical, magnetic, mechanical, hydraulic, aerodynamic, and thermal systems; applications to specific engineering devices and machines. Prerequisite: permission of instructor. 3 units. (w) ASSOCIATE PROFESSOR ARTLEY

EE 202. *INFORMATION SYSTEMS.—General concepts of information storage, transfer, and processing; optimum total response of information handling systems, including considerations of stability and dynamic response in the time and frequency domains; applications to communications networks and devices, including an introduction to computers. Prerequisite: permission of instructor. 3 units. (w)
ASSOCIATE PROFESSOR OWEN

EE 211. *SOLID STATE ENGINEERING.—Introductory concepts and engineering applications of solid state physics: crystalline structure and thermal properties of solids; insulators, semiconductors, and conductors; magnetic materials. Prerequisite: permission of instructor. 3 units. (w) PROFESSOR VAIL

EE 222. *NONLINEAR ELECTROMAGNETICS.—Analytic approximations for nonlinear characteristics; use of idealized components in the analysis of piecewise-linear systems; approaches applicable when a material such as high-permeability steel possesses characteristics which are different under static and dynamic conditions; applications to devices such as transductors, self-saturating magnetic amplifiers, modulators, ferroresonant circuits, relaxation oscillators and parametric amplifiers. Prerequisite: permission of instructor. 3 units.
ASSOCIATE PROFESSOR WILSON

EE 231. *NUCLEAR ENGINEERING.—Review of nuclear physics; fission and the chain reaction; nuclear reactor principles; materials, instrumentation, and control of nuclear reactors; selected applications and techniques of nuclear engineering. Prerequisite: permission of instructor. 3 units. (w) PROFESSOR MEIER

E 259. *ADVANCED ELECTRICAL ENERGY CONVERSION.—Advanced theory of rotating electric machines; direct and quadrature axis components; equivalent circuits; symmetrical components; transients in machine systems. Prerequisite: an advanced course in electric machinery and permission of instructor. 3 units. (w)
PROFESSOR MEIER AND ASSOCIATE PROFESSOR WILSON

EE 265. *ADVANCED TOPICS IN COMMUNICATIONS.—Special problems dealing in the design and application of devices and systems in communications engineering. Prerequisite: an advanced course in electronic networks. 3 units. (w)
ASSOCIATE PROFESSOR OWEN

The Department offers work leading to graduation with distinction. See the section on Honors.

* Offered only upon sufficient demand; enrollment limited.

MECHANICAL ENGINEERING

PROFESSOR MACDUFF, CHAIRMAN; PROFESSOR KENYON; ASSOCIATE PROFESSORS BOYLE, ELSEVIER, AND STEPHENSON; ASSISTANT PROFESSOR LEWIS; MESSRS. ARNAS, BUZZARD, CALLESON, CEBECI, ERASLAN, GLENN, AND NASH

ME 52. KINEMATICS, KINETICS.—Analytical and numerical studies of displacement, velocity, and acceleration in mechanical elements and systems. Synthesis and analysis of mechanisms for automatic machines, application of work, energy, impulse and momentum. Prerequisite: Engrg 2, Phys 41. Concurrent: Math 63. 4 s.h. (w) PROFESSOR MACDUFF; ASSOCIATE PROFESSOR STEPHENSON, AND MR. NASH

ME 59. MATERIALS AND PROCESSES.—Elementary metallurgy and introduction to modern theories of the solid state; selection and properties of engineering materials and effect of forming processes upon properties. Prerequisite: Sophomore standing. 3 s.h. (w) ASSOCIATE PROFESSOR STEPHENSON AND MR. CALLESON

ME 101-102. ENGINEERING THERMODYNAMICS.—A basic study of the laws of thermodynamics and their use in engineering analysis and design. Properties of pure substances; vapor cycles; fluid flow; thermodynamic machinery; introduction to combustion processes. Prerequisite: Chem 1, Phys 41. Concurrent: Math 64. 6 s.h. (w) PROFESSOR KENYON; ASSOCIATE PROFESSORS BOYLE AND ELSEVIER

ME 103. THERMODYNAMICS.—A terminal course in thermodynamics and its engineering applications for civil and electrical engineering students. The basic laws of thermodynamics; gases; vapors; elements of combustion and heat transfer. Prerequisite: Chem 1, Phys 41. Concurrent: Math 64. 3 s.h. (w)
ASSOCIATE PROFESSOR ELSEVIER, MESSRS. ARNAS AND CALLESON

ME 105. DYNAMICS OF LIQUIDS.—A study of liquids at rest and in motion. Principles of laminar and turbulent flow through pipes, orifices, nozzles, and metering devices; impulse and momentum concepts; vortex action, pumps, turbines and fluid couplings; resistance of immersed and floating bodies. Prerequisite: Phys 41 Math 63. 3 s.h. (w) PROFESSOR KENYON AND MR. BUZZARD

ME 106. HEAT TRANSFER.—A basic course covering the elements of radiation, conduction, and convection. Methods of temperature measurement, steady and transient heat flow, analytical and numerical methods. Concurrent: ME 102, 105; Math 111. 3 s.h. (w)
ASSOCIATE PROFESSOR STEPHENSON AND MR. BUZZARD

ME 113-114. JUNIOR MECHANICAL ENGINEERING LABORATORY.—Measurement of mechanical and thermodynamic properties of systems. Student planning and reporting of laboratory experiments in temperature, pressure, velocity, acceleration, flow, energy and power measurements. Concurrent: ME 101-102, ME 105-106. 2 s.h. (w) STAFF

ME 116. MECHANICAL ENGINEERING LABORATORY.—Primarily for civil and electrical engineering students. Selected laboratory experiments in measuring mechanical and thermodynamic properties of systems. Student planning of experiments in temperature, pressure, velocity, acceleration, flow, energy and power measurements. Concurrent: ME 103. 1 s.h. (w) STAFF

ME 128. *DYNAMICS OF GASES.—The flow of compressible fluids at high velocities. One-dimensional compressible flow; area change; normal shock; friction and heat transfer; Mach number. Concurrent: ME 102, ME 106. 3 s.h. (w)
MR. BUZZARD

ME 141. MACHINE DESIGN.—Methods of design of typical machine elements; strength and deflection requirements; simple shafts, springs, power transmitting devices, materials, and cost analysis. Prerequisites: Engrg. 107, ME 59. Concurrent: ME 52. 3 s.h. (w)
ASSISTANT PROFESSOR LEWIS, MESSRS. CALLESON AND NASH

ME 142. MACHINE DESIGN.—A continuation of ME 141. Analysis of gears and gear trains; lubrication; brakes and clutches; introduction to advanced topics. Prerequisite: ME 141. 3 s.h. (w)
ASSISTANT PROFESSOR LEWIS, MESSRS. CALLESON AND NASH

ME 153. *HEATING, AIR CONDITIONING AND REFRIGERATION.—Principles of thermodynamics, heat transfer and fluid flow applied to comfort and industrial air conditioning. Cycles and equipment for heating, cooling, and humidity control. Air transmission and distribution. Modern vapor compression, absorption and low temperature refrigeration cycles and systems. Prerequisite: ME 102 and 106. 3 s.h. (w) ASSOCIATE PROFESSORS ELSEVIER AND STEPHENSON

ME 156. COMBUSTION ENGINES.—A study of cycles, fuels, and fuel mixtures in piston, ram jet, and rocket engines. Comparison of real and theoretical cycles; carburetion and fuel injection systems; modern developments. Prerequisite: ME 102. 3 s.h. (w) ASSOCIATE PROFESSOR ELSEVIER

ME 157. *PUMPS, COMPRESSORS AND TURBINES.—An introduction to the theory and design of centrifugal pumps and compressors, axial-flow compressors, impulse and reaction turbines, and gas turbine plants, combustion systems and regenerators. Concurrent: ME 102 and 106. 3 s.h. (w) ASSOCIATE PROFESSOR BOYLE

ME 159-160. SENIOR MECHANICAL ENGINEERING LABORATORY.—Laboratory determination of heat flow and operating characteristics of engines, fans, pumps, and other power and refrigeration plant components; vibrational systems, control systems, analog methods. Student planning and reporting of original experiments. 2 s.h. (w) STAFF

ME 162. POWER PLANTS.—Basic concepts of thermodynamics, heat transfer and fluid flow are combined with industrial data for the consideration of real power plant problems. Selection of steam generators, prime movers, fans, pumps, heaters, and piping systems with regard to engineering and economic points of view. Prerequisite: ME 102. 3 s.h. (w) PROFESSOR KENYON AND ASSOCIATE PROFESSOR BOYLE

ME 163. *VIBRATION CONTROL.—An introduction to the dynamics of mechanical systems; equilibrium, stability, lumped and distributed systems, cradle and field balancing. System analysis by classical differential equations, mechanical impedance, operational calculus and analog simulation. Prerequisite: Math 64. ME 141. 3 s.h. (w) PROFESSOR MACDUFF

ME 164. *ENGINEERING ANALYSIS.—A study of a series of engineering problems with particular reference to mathematical and graphical methods of solution and engineering interpretation of results. Concurrent: Math 64. 3 s.h. (w)
ASSOCIATE PROFESSOR BOYLE

ME 166. *AIR CONDITIONING DESIGN.—Typical air conditioning systems considered in relation to specific problems. Equipment analysis and performance, economic considerations, system control and response, noise generation and attenuation. Prerequisite: ME 153. 3 s.h. (w) ASSOCIATE PROFESSORS BOYLE AND ELSEVIER

ME 167. INDUSTRIAL ENGINEERING.—A study of the organization and functioning of industries; function of engineering in industry; job analysis and self evaluation; professional and executive responsibility of the mechanical engineer. Prerequisite: Senior standing. 3 s.h. (w)
PROFESSOR KENYON AND ASSISTANT PROFESSOR LEWIS

ME 171. RESPONSE OF PHYSICAL SYSTEMS.—An introduction to the basic fundamentals of instrumentation and of the control of processes and systems with emphasis on correlation of analysis and experimental results. Prerequisite: Math 111. 3 s.h. (w) PROFESSOR MACDUFF, ASSOCIATE PROFESSOR BOYLE AND MR. BUZZARD

ME 173-174. MECHANICAL ENGINEERING SEMINAR.—A course designed to keep the students abreast of progress in the engineering field and to develop their ability to express ideas effectively in speech and writing. Open to seniors only. 2 s.h. (w) STAFF

* Offered only upon sufficient demand; enrollment limited.

ME 197-198. PROJECTS IN MECHANICAL ENGINEERING.—This course may be assigned by the Chairman of the Department to outstanding seniors who express a desire for such work and who have shown aptitude for research in one distinct field of mechanical engineering. Prerequisite: 3.0 average and senior standing. 1-6 s.h. (w) STAFF

The Department offers work leading to graduation with distinction. See the section on Honors.

ENGINEERING SUBJECTS COMMON TO ALL CURRICULA

ENGRG 1. ENGINEERING GRAPHICS.—The study of mechanical drawing with emphasis on third angle projection, pictorial drawing, dimensioning, working drawings, pencil and ink techniques. 2 s.h. (w)
ASSISTANT PROFESSORS HAINES AND LEWIS AND STAFF

ENGRG 2. DESCRIPTIVE GEOMETRY.—A study of drawing board geometry with emphasis on line and plane problems, developments, and intersections. Further emphasis on drawing techniques. Prerequisite: Engrg 1. 2 s.h. (w)
ASSISTANT PROFESSORS HAINES AND LEWIS AND STAFF

ENGRG 57. STATICS.—A study of force systems, equilibrium by algebraic and graphic methods, centroids, friction, moment of inertia. Prerequisite: Engrg 1. Concurrent: Math 63. 3 s.h. (w) ASSISTANT PROFESSORS HARRAWOOD AND THARP

ENGRG 60. STATICS AND STRENGTH OF MATERIALS.—Force systems, friction, centroids, and moments of inertia. Stresses and deformations in elastic bodies. Concurrent: Math 64. For electrical engineers and nonengineering students. Three class sessions and one three-hour computation period. 4 s.h. (w)
STAFF

ENGRG 107. MECHANICS OF MATERIALS.—Stresses and strains in elastic bodies; shear and moment diagrams; stresses in beams; beam deflections by double integration and area—moments; statically indeterminate beams, torsion, principal stresses. Prerequisite: Engrg 57. Concurrent: Math 64. 3 s.h. (w)
PROFESSOR ROWE AND ASSISTANT PROFESSOR ARGES

ENGRG 109. MECHANICS OF MATERIALS LABORATORY.—Study and use of testing machines and strain gages; tests to determine significant physical properties of the common engineering materials; experimental verification of the elementary theory of structural members. Must be preceded or accompanied by Engrg 107. 1 s.h. (w) ASSISTANT PROFESSOR ARGES

ENGRG 115. DYNAMICS.—General principles of dynamics as applied to particles and rigid bodies. Translation, rotation, general plane motion, work and energy, impulse and momentum, gyroscopic motion. Prerequisite: Engrg 57 or Engrg 60. Concurrent: Math 64. 3 s.h. (w) ASSOCIATE PROFESSORS GARDNER AND PALMER

ENGRG 128. FLUID MECHANICS.—Physical properties of fluids, fluid statics, continuity and energy principles, pressure-momentum principle, elementary principles of turbines and pumps, flow of a real fluid, dimensional analysis and dynamic similarity, fluid flow in closed conduits and in open channels, fluid measurements. Prerequisite: Engrg 115 or ME 52, Math 64. 3 s.h. (w)
PROFESSOR WILLIAMS AND ASSISTANT PROFESSOR HARRAWOOD

ENGRG 151. *AIRCRAFT STRUCTURES.—Fundamental theory of stress analysis of airplane components including an introduction to design principles and methods. Space structures, inertia forces, load factors, properties of aircraft materials, buckling of thin sheets and curved panels, semimonocoque structures, plasticity, shear flow theory, semitension field beams. Seniors only. Prerequisite: Engrg 107. 3 s.h. (w) PROFESSOR ROWE

ENGRG 153. *ARCHITECTURAL ENGINEERING.—The application of engineering principles to architecture; the influence of engineering function and trends on design; the interrelationship of engineering with architecture; the analy-

* Offered only upon sufficient demand; enrollment limited.

sis of structural details and of processes of construction; field trips and inspection of construction projects. Prerequisite: permission of instructor. 3 s.h. (w)
Assistant Professor Haines

ENGRG 169. *LEGAL ASPECTS OF ENGINEERING.—A course designed to introduce engineering students to those aspects of the law encountered in the practice of engineering. Subjects included are: contracts and specifications, real and personal property, torts, insurance, agency, equity, evidence, labor management, sales, expert testimony, engineering registration and ethics. Open to seniors only. 3 s.h. (w) Mr. Olive

ENGRG 170. *PATENT LAW FOR ENGINEERS.—A course designed to familiarize engineering students with the legal principles and procedures for protecting patentable inventions, such as drafting and analysis of specifications and claims, study of infringements, assignments, licenses, and record documentation. Open to seniors only. 3 s.h. (w) Mr. Olive

* Offered only upon sufficient demand; enrollment limited.

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BULLETIN
OF
DUKE UNIVERSITY



The School of Medicine

ANNOUNCEMENTS FOR 1960-61

VOLUME 32 April, 1960 NUMBER 6

Annual Bulletins

For Bulletin of Information for Prospective Students, apply to *The Registrar,* Duke University, Durham, N. C.

For Bulletin of Undergraduate Instruction, apply to *The Registrar,* Duke University, Durham, N. C.

For Bulletin of The College of Engineering, apply to *The Registrar,* Duke University, Durham, N. C.

For Bulletin of The Graduate School of Arts and Sciences, apply to *The Dean of the Graduate School,* Duke University, Durham, N. C.

For Bulletin of The School of Forestry, apply to *The Dean of the School of Forestry,* Duke University, Durham, N. C.

For Bulletin of The School of Law, apply to *The Dean of the School of Law,* Duke University, Durham, N. C.

For Bulletin of The School of Medicine, apply to *The Dean of the School of Medicine,* Duke University, Durham, N. C.

For Bulletin of The School of Nursing, apply to *The Dean of the School of Nursing,* Duke University, Durham, N. C.

For Bulletin of The Divinity School, apply to *The Dean of the Divinity School,* Duke University, Durham, N. C.

For Bulletin of The Summer Session, apply to *The Director of the Summer Session,* Duke University, Durham, N. C.

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BULLETIN

OF

DUKE UNIVERSITY

THE SCHOOL OF MEDICINE
AND
DUKE UNIVERSITY MEDICAL CENTER

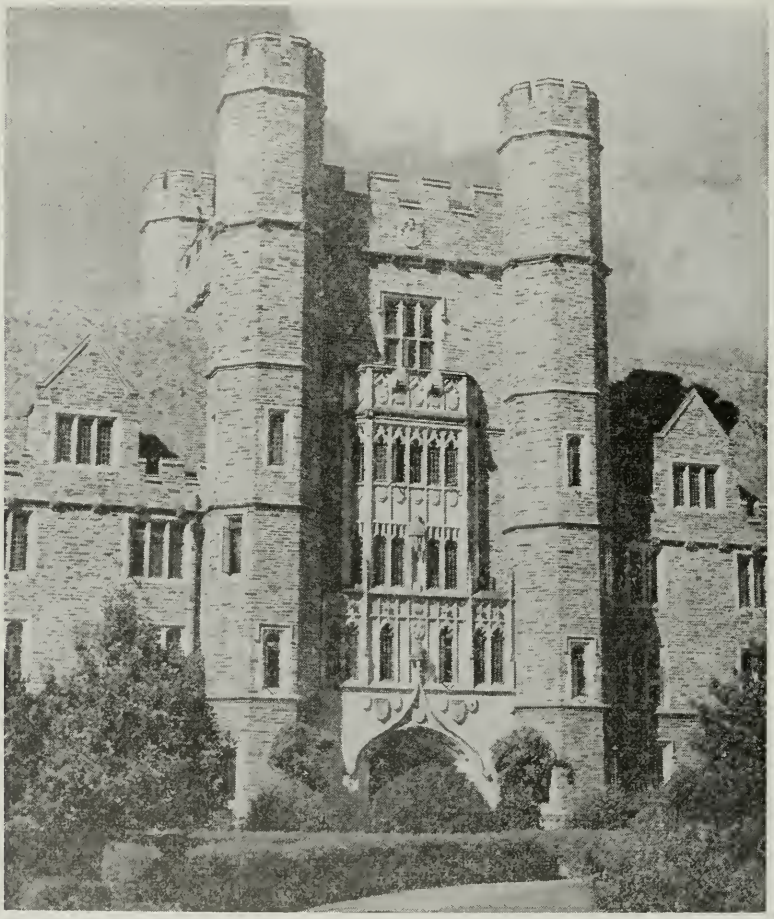
1960-1961

ANNOUNCEMENTS FOR 1960-1961

DURHAM, NORTH CAROLINA
1960

Foreword

This bulletin is issued for prospective medical students. Admission into any class is made only on the understanding that every decision of the Committee on Health Affairs shall apply to all students, even though it is made subsequently to their enrollment in the School. At frequent intervals the Committee on Health Affairs reviews the records of all students, and those whose progress has been unsatisfactory may be required to leave the School. Only those will be advanced who, in the opinion of the Committee on Health Affairs, give promise of being a credit to themselves and to the School. The next first-year class will be admitted September 12, 1960. For admission requirements and applications, see page 15.



The School of Medicine

Officers of Administration

General Administration

Arthur Hollis Edens, Ph.D., LL.D. *President of the University*	West Campus
Paul Magnus Gross, Ph.D. *Vice-President in the Division of Education*	Hope Valley
Charles Edward Jordan, A.B., LL.D. *Vice-President in the Division of Public Relations*	615 West Campus Drive
Herbert James Herring, M.A., LL.D. *Vice-President in the Division of Student Life*	2910 Myrtle Drive
Marcus Edwin Hobbs, Ph.D. *Dean of the University*	115 Pinecrest Road
Alfred Smith Brower, A.B. *Treasurer*	614 West Campus Drive
Gerhard Chester Henricksen, C.P.A. *Business Manager and Comptroller*	216 Forest Wood Drive
John Marion Dozier, A.B. *Secretary of the University*	2510 Wrightwood Avenue

Duke University Medical Center

Wilburt C. Davison, M.D., D.Sc., LL.D., *Dean, School of Medicine.*
Joseph E. Markee, Ph.D., *Assistant Dean in Charge of Admissions.*
William M. Nicholson, M.D., *Assistant Dean in Charge of Postgraduate Education.*
William P. J. Peete, M.D., *Assistant to the Dean, School of Medicine.*
Ann Jacobansky, M.A., *Dean, School of Nursing.*
Charles H. Frenzel, A.B., *Superintendent of Duke Hospital.*

Committee on Health Affairs

W. C. Davison, *James B. Duke Professor of Pediatrics, Dean of the School of Medicine and Chairman of the Committee on Health Affairs.*
*Barnes Woodhall, *Professor of Neurosurgery.*
Ann Jacobansky, *Professor of Nursing and Dean of the School of Nursing.*
Charles H. Frenzel, *Associate Professor of Hospital Administration and Superintendent of Duke Hospital.*
Edith P. Brocker, *Associate Professor of Nursing and Assistant Dean of the School of Nursing.*
E. W. Busse, *Professor of Psychiatry.*
Bayard Carter, *Professor of Obstetrics and Gynecology.*
Lelia R. Clark, *Director of Nursing Service.*
Norman F. Conant, *Professor of Microbiology.*
W. D. Forbus, *Professor of Pathology.*
F. G. Hall, *Professor of Physiology and Pharmacology.*
Philip Handler, *Professor of Biochemistry.*
Jerome S. Harris, *Professor of Pediatrics.*
Deryl Hart, *Professor of Surgery.*
Thelma M. Ingles, *Associate Professor of Nursing, Director of the Graduate Program in Nursing and of the Division of Medical-Surgical Nursing.*
J. E. Markee, *James B. Duke Professor of Anatomy, and Assistant Dean in Charge of Admissions.*
William M. Nicholson, *Professor of Medicine in Charge of Diseases of Metabolism, and Assistant Dean in Charge of Postgraduate Education.*
W. P. J. Peete, *Assistant Professor of Surgery and Assistant to the Dean.*
R. J. Reeves, *Professor of Radiology.*
James H. Semans, *Associate Professor of Urology.*
D. T. Smith, *James B. Duke Professor of Bacteriology and Associate Professor of Medicine.*
E. A. Stead, Jr., *Florence McAlister Professor of Medicine.*
Louise E. Swanson, *Assistant Superintendent and Associate Professor of Hospital Administration.*
Barnes Woodhall, *Professor of Neurosurgery.*
Four other members of the faculty holding the rank of Assistant Professor or above, by alphabetical rotation.

* Appointed Dean, effective July 1, 1960.

1960

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School of Medicine Calendar
1960-1961

1960

January	4	Monday—Classes resume.
January	30	Saturday—End Second Term.
February	1	Monday—Begin Third Term.
April	2	Saturday—End Third Term
April	2-10	Spring Vacation for third and fourth-year students.
April	11	Monday—Begin Fourth Term.
April	9-17	Spring Vacation for first and second-year students.
April	18	Monday—Easter Holiday.
June	6	Monday—Commencement Exercises.
June	11	Saturday—End Fourth Term.
July	5	Tuesday—Summer Term Begins.
September	3	Saturday—End Summer Term.
September	12	Monday—Begin First Term.
November	12	Saturday—End First Term.
November	14	Monday—Begin Second Term.
December	11	Sunday—Founders' Day.
December	17	Saturday—Christmas Recess begins.

1961

January	2	Monday—New Year's Holiday.
January	3	Tuesday—Classes resume.
January	28	Saturday—End Second Term.
January	30	Monday—Begin Third Term.
April	1	Saturday—End Third Term.
April	3	Monday—Easter Holiday.
April	1-9	Spring Vacation for Third and Fourth Year students.
April	10	Monday—Begin Fourth Term.
April	8-16	Spring Vacation for First and Second Year students.
June	5	Monday—Commencement Exercises.
June	10	Saturday—End Fourth Term.
July	3	Monday—Summer Term Begins.
July	4	Tuesday—Independence Day—Holiday.
September	2	Saturday—Summer Term Ends.
September	11	Monday—Begin First Term.
November	11	Saturday—End First Term.
November	13	Monday—Begin Second Term.
November	23	Thursday—Thanksgiving Day.
December	11	Monday—Founders' Day.
December	16	Saturday—Christmas Recess Begins.

General Information

Introduction

Duke University Medical Center was established in 1930, through the munificent gift of the late James B. Duke. The School of Medicine and Hospital are located in the same building situated on the campus of Duke University. Both have been planned to insure the greatest correlation between the various departments. The students in the School of Medicine are accorded the same privileges and are subject to the same laws and regulations as those of the other divisions in the University. Seventy-six students are admitted to the first year class each year and on September 14, 1959 three hundred and twelve students were enrolled.

Aims of the School

Duke University School of Medicine, from its beginning in 1930, has maintained as it major objectives: (a) the cultivation and teaching of medicine on a strictly scientific basis; (b) the correlation of medical research with medical teaching at all levels of its teaching, and (c) the continuous search for and experimentation with new or improved methods of teaching scientific medicine. In order to attain these objectives, the School has been organized, its physical plant planned, and its administrative structure constituted so that there exists the closest possible academic and physical relationship between undergraduate and graduate work in the University and the School of Medicine, and also between the basic medical sciences and the clinical sciences within the School and its integrated teaching Hospital. The professional staff of the School is composed of two general categories, those with permanent appointment and unlimited tenure, and those with temporary appointment. The latter, the much larger group, is maintained on a highly fluid basis, which makes possible a high degree of selectivity in appointment for academic training and scientific research. The smaller group of permanent appointees has in every individual a background characterized by academic and scientific attainment. The professional, academic, and scientific environment created by the staff is thus such as to engender scientific inquiry and to encourage diligent pursuit of the medical sciences in all their relationships. The staff at all levels devotes its entire professional time to the activities of the Medical Center.

Degrees

Doctor of Medicine. The degree of Doctor of Medicine is conferred on those who have completed, to the satisfaction of the Committee on Health Affairs, the sixteen terms of nine weeks each of the curriculum of the School of Medicine, and have signed an agreement that they will spend at least two years of the succeeding three years in hospital or laboratory work acceptable to the Committee on Health Affairs. As a guarantee of this pledge the diploma is deposited in the Treasurer's office until after the completion of this training. At the time of graduation a temporary certificate is issued which must be returned prior to the delivery of the permanent diploma. Failure to fulfill this agreement constitutes a waiver of any claim to possession of the diploma and the degree of Doctor of Medicine. This required period of approved hospital or laboratory may be active duty in the Armed Forces or U. S. Public Health Service.

Bachelor of Science in Medicine. After the completion of eight terms in Duke University School of Medicine, Duke University, on the recommendation of the Committee on Health Affairs, grants the degree of Bachelor of Science in Medicine to medical students who have completed creditable investigative work, prepared an acceptable report of the investigation, and passed an examination upon the subject of investigation before an advisory committee. Students who elect to undertake work toward this degree must obtain written permission from the Committee on Health Affairs after approval of their program by the head of the department in which the work is to be done. No credit toward this degree is given for additional college work. All students in good standing are encouraged to undertake such investigative work as they may elect with the approval of the head of the department in which they wish to work.

Master of Science and Doctor of Philosophy. Work leading to each of these degrees may be pursued in the preclinical departments. For further details concerning conditions under which these degrees are awarded consult the Bulletin of the Graduate School of Arts and Sciences.

Training Program for Clinical Investigators. Medical students who have completed the first two years of the curriculum, members of the Duke Hospital resident staff, Postdoctoral Fellows in the clinical and preclinical departments and qualified graduate students may be admitted to the special Training Program for Clinical Investigators to be instituted in the autumn of 1959 and conducted annually thereafter. The Program lasts nine months and includes three types of activities: (1) Formal didactic training and seminars including a review of mathematics with emphasis on calculus, biostatistics, fundamentals of electronics, logic and the scientific method, genetics, and advanced

study in cytology, biochemistry, physiology, pharmacology, microbiology, and biophysics. (2) An extensive series of laboratory experiences in which the participants perform a set of important experiments derived from each of the disciplines listed above and in which they learn the use of important and complex tools and techniques not ordinarily available in undergraduate courses. (3) A research problem conducted either in the general laboratory set apart for this program or in the laboratory of one of the faculty with whom the participant chooses to work. All aspects of the program will be housed in especially constructed quarters in the W. B. Bell Medical Research Building.

Credit will be given to undergraduate medical students equivalent to one elective quarter for participation in this program. The Graduate School of Duke University will also accept the total of the first two years of medical school plus participation in this program as residence time toward the degree of Doctor of Philosophy. In addition, the individual student must satisfy the language and dissertation requirements of the Graduate School and any additional requirements stipulated by the department in which he elects to obtain this degree.

The objective of the program is to provide a more sound basis for the future work of those hoping to devote their lives to a career in investigative medicine and biology. Applicants will be admitted to the program on the basis of past academic performance, evidence of research bent and curiosity, and motivation toward an academic research career. It is suggested that medical students undertake this program at the completion of the first two years of the curriculum and then return to the normal clinical medical curriculum. Such students should also expect to undertake one or two years of a postdoctoral research fellowship in the course of their residency training in order to prepare themselves fully for a research career.

Student Government

Members of the student body elect an Honor Council, in which each class is represented. It is the duty of the Honor Council to hear all cases involving breaches of conduct on the part of members of the student body. All students entering the School are required to comply with this system of government. The Council for 1959-1960 is as follows:

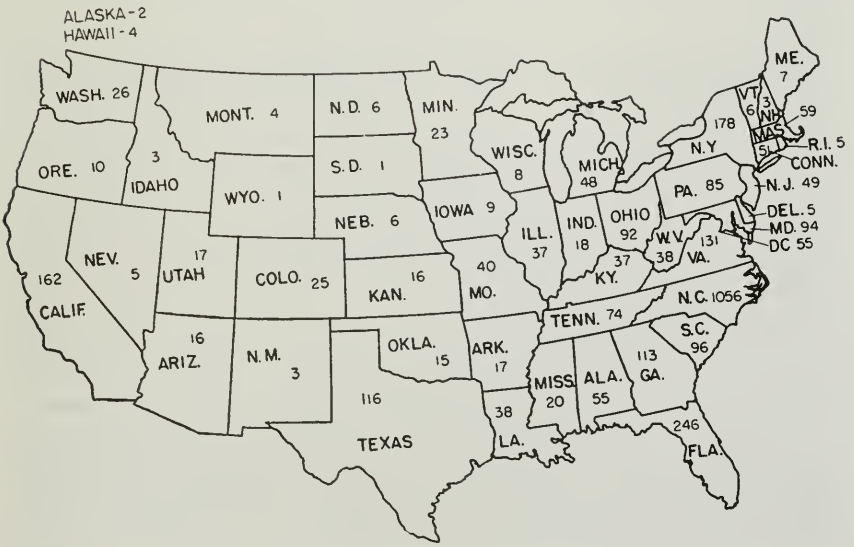
President: Carl H. Weber, Jr.
Secretary: Grady E. Price
Treasurer: George W. Lazenby, III
Fourth-Year Class President: William C. Cooper
Representatives: E. Joseph LeBauer
Patrick J. O'Shaughnessy

Third-Year Class:	John A. Feagin, Jr.
	Charles B. Hammond
	Thomas A. El-Ramey
Second-Year Class:	William B. Waddell
	Benjamin F. Orman
	Robert N. Grant
First-Year Class:	Thomas P. Graham, Jr.
	Owen B. Tabor
	Angus M. McBryde, Jr.

The Duke University Medical Alumni

The Duke University Medical Alumni now number over three thousand. Membership includes all graduates of the medical school (total through 1959—1,818), past and present faculty, all past and present house-officers of Duke Hospital (including the 1,584 who are not Duke graduates); making a grand total of 3,402. Associate membership is held by the alumni of the following Paramedical Services: Hospital Administration, Dietetics, Social Service, Laboratory Technique, X-Ray Technology, Physical and Occupational Therapy, Medical Record Library, and Medical Art and Illustration.

Ben N. Miller '35, President (Columbia, S. C.)
Larry Turner '39, Vice-President (Durham, N. C.)
George J. Baylin '37, Treasurer (Duke University Medical Center)
Talmage L. Peele '34, Secretary (Duke University Medical Center)



Charles A. Dukes, Director of Alumni Affairs (Duke University)
Fred W. Whitener, Assistant to the Director of Alumni Affairs (Duke University)

A news letter is sent to all the members in January, April, July, and October of each year. Reunions are held every three years in Durham, the next planned for 1961. Alumni groups have been formed in several states.

Alumni luncheons or dinners are held during the following meetings: The American Medical Association, The Southern Medical Association, The North Carolina Medical Society, and The American Academy of Pediatrics.

The map shows states in which Duke doctors are located and the number in each state. Figures include those who received the M.D. degree from Duke and those who have served a year or more on the house staff.

Not shown are the 140 physicians serving in territories of the U. S. and in foreign countries* and 31 on duty in the Armed Forces overseas. A total of 3,231 physicians are distributed among all the United States.

Living Accommodations

The Men's Graduate Center is available to men enrolled in the Medical School. The rooms are equipped for two persons and the rental charge for a double room is $420.00 for the academic year (4 terms) or $210.00 for each occupant, or $52.50 each occupant per term.

Epworth Hall on the Woman's College Campus and Hanes House on the Duke University Campus are available to women enrolled in the Medical School. The rental charge for a single room in Epworth Hall is $285.00 for the academic year or $71.25 per term. The rental charge for a double room is $470.00 for the academic year (4 terms) or $235.00 for each occupant, or $58.75 each occupant per term. There are no single rooms for medical women in Hanes House. The rental charge for a double room in Hanes House is $490.00 for the academic year (4 terms) or $245.00 for each occupant, or $61.25 each occupant per term.

The University does not maintain housing facilities for married students. Married students should arrange for rooms or apartments in the city. In order to aid married students, the Housing Bureau

* Afghanistan, one; Belgium, two; Brazil, three; Canada, twenty-two; Chile, four; Colombia, seven; Costa Rica, one; Cuba, five; Egypt, two; Formosa, eleven; France, four; Germany, two; Greece, one; Guatemala, four; India, three; Iceland, two; Iraq, one; Jamaica, B.W.I., one; Japan, eleven; Jordan, one; Korea, two; Lebanon, one; Mexico, five; Norway, two; Panama, two; Paraguay, two; Peru, two; Philippine Islands, five; Puerto Rico, four; South Africa, one; Sweden, one; Switzerland, one; Thailand, five; United Kingdom, sixteen; Venezuela, two; Virgin Islands, one.

maintains a file on rooms and apartments listed for rental to Duke students.

Applications for rooms are to be made to the Housing Bureau, Duke University, Durham, N. C. Rooms are rented for an academic year, but for no period less than one term except by special arrangement. No refund of room rent will be made except for involuntary withdrawal to enter the armed services. Such refunds will be made in accordance with the University's established schedule.

Rooms may be reserved by new applicants only if they have been accepted officially for admission to the School of Medicine and after they have paid the $25.00 room deposit to the Duke University Treasurer. The initial room deposit is effective in making room reservations for each term of continuous residence. In the event that a student moves out of the residence hall for as much as one term, the initial deposit may no longer be used to reserve a room, except when residence away from the residence hall is a normal part of the academic program approved by the Dean of the School of Medicine.

Regulations governing the occupancy of rooms will be supplied by the Housing Bureau to those students making application for housing. Occupants are expected to abide by these regulations.

The dining facilities in the Men's Graduate Center, Duke University Union, and the Woman's College Union are available to students of the Medical School. The cost for the academic year ranges from $450.00 upward, depending on the taste of the individual.

Medical Care

Elbert L. Persons, A.B., M.D., *Physician-in-Charge and Professor of Medicine.*
Caroline E. Helmick, A.B., M.D., *Woman's Campus Physician, Associate in Preventive Medicine.*

With the exceptions noted below, full medical and surgical care is furnished to all regularly matriculated medical students of the University who have paid the quarterly General Fee. This service is under the direction of the Physician-in-Charge with the co-operation of the staff of the Duke University Medical Center. It includes hospitalization (limited to thirty days), medical and surgical care, drugs, dressings, x-ray studies, and ward but not special nursing. A charge for board is made at the same rate as in the University dining halls. Refraction of eyes and treatment of teeth and of all chronic and preexisting conditions, such as diseased tonsils, hernia, elective surgery, chronic skin conditions, endocrine disturbances, etc., or accidents or illnesses occurring during vacations or while off the campus are not included in this service. The cost of any necessary braces and orthopaedic appliances, as well as of special nursing must be borne by the patient. If the student has insurance providing hospitalization, sur-

gical, or medical benefits, the benefits shall be applied to the cost of his medical care.

Facilities

Duke Hospital. Duke Hospital, an integral part of the Duke University Medical Center, has every modern convenience for the diagnosis, proper care, welfare and comfort of the patients, both ward and private, white and colored, whether they come from Durham or from a distance. It has 666 beds, including 30 bassinets for newborn infants, and a nursery for 20 prematures. Medicine, including dermatology and neurology, has 77 ward beds; surgery, including urology, otolaryngology, ophthalmology, and orthopaedics, 135 ward beds; obstetrics, including gynecology, 59; psychiatry, 30; and pediatrics, 75 beds for children and 50 for infants. There are 290 beds in private and semiprivate rooms, 20 air conditioned operating rooms, 4 obstetric delivery rooms, and ward and student laboratories. Offices and examining rooms for members of the Medical Faculty are located in the Hospital and Out-Patient Department. A new four million dollar air-conditioned wing, recently completed, added 100 private beds, private and public clinic facilities, 10 operating rooms, expanded x-ray services, an ambulant patients' dining room, modern instructional space and improved general service facilities. The Hospital has been approved for internships and residencies by the Council on Medical Education and Hospitals of the American Medical Association, and is approved by the Joint Commission on the Accreditation of Hospitals..

Duke Hospital and its Out-Patient Clinic were opened for patients on July 21, 1930. The average daily census of hospital patients during the past year was 475; 219,600 visits were made to the out-patient clinics during the same period. 50% of the hospital patients occupied ward beds and 50% of the clinic visits were made to the public out-patient clinics. Patients came from almost every county of North Carolina and from many states of the Union and several foreign countries.

The Private Diagnostic Clinic was organized to co-ordinate the diagnostic studies, and to give better care to the complicated problems arising in the examination of private patients. The Clinical Staff of the Duke University Medical Center forms the professional staff of this clinic. The offices and examining rooms are in Duke Hospital, and all of the laboratory and diagnostic facilities of the Hospital and School of Medicine are utilized by the Clinic.

Veterans Hospital. The Durham Veterans Administration Hospital is located within walking distance of the School of Medicine.

This 485 bed general hospital was opened in April, 1953. Its full-time professional staff are all members of the faculty of Duke University School of Medicine and the house staff training at Veterans Hospital and Duke Hospital are closely integrated.

Library

Judith Farrar, A.B. (USC, 1928), B.S. (Columbia, 1929), *Librarian and Professor of Medical Literature.*

Mildred Perkins Farrar, A.B. (Congress, 1893), *Assistant Librarian.*

Rachel Chester Roth, A.B. (Hood, 1951), M.F.A. (Iowa State, 1953), M.S. (Columbia, 1957), *Librarian, Trent Collection in Medical History.*

Polly Gibbs Miller, A.B. (Meredith, 1950), *Bibliographic Librarian.*

"To study the phenomena of disease without books is to sail an uncharted sea, while to study books without patients is not to go to sea at all."—Sir William Osler.

In addition to the General Library of Duke University and the departmental libraries of biology, chemistry, physics, etc., which have 1,343,768 volumes available for medical students, Duke Hospital Library contains 68,400 volumes of American and foreign medical literature and subscribes to 758 current American and foreign medical and other scientific journals. The Trent Collection contains approximately 4,000 books in the field of medical biography and history and 2,500 autographs and manuscripts. These books and journals are available daily from 8:30 A.M. to 11:00 P.M. for the students, nurses, staff, and medical profession.

GENERAL INFORMATION FOR APPLICANTS

Years of college work required for entrance	3
Resident and Non-resident tuition and fees for first year	$1200
Estimated cost of equipment (books, supplies, etc.) first year	$265
Estimated minimum cost of room and board for first year	$600
Amount of non-refundable application fee	$10
May give early decision to applicant preferring this school but offered a place in another school	Yes
Medical College Admission Test required	Yes

1961-62 FIRST YEAR CLASS

Size of first year class	76
File application for admission between	Aug. 15, 1960 Dec. 1, 1960
Applicant will be notified of action on his application between	Nov. 1, 1960 Feb. 15, 1961
Amount of deposit fee required on or after January 15, 1961, to hold place in class if applicant is accepted	$50
Date entering class starts program	Sept. 11, 1961

Address inquiries to:

Committee on Admissions
Duke University School of Medicine
Box 3710, Duke University Medical Center
Durham, North Carolina

Admission

I request that great care and discrimination be exercised in admitting as students only those whose previous record shows a character, determination and application evincing a wholesome and real ambition for life."—James B. Duke.

Intelligence, character and integrity are the essential qualifications for admission.

A premedical student should be aware of the importance of a well-rounded general education as a preparation for the study of medicine and not limit himself to scientific courses. Experience has shown that the medical student with a considerable science background enjoys no advantage over his classmates with less premedical science preparation. The Admissions Committee believes that the manner in which the college load is carried is of greater importance than the specific subjects taken. The premedical student would be better advised to secure a knowledge of the principles and a thorough appreciation of the interrelations of the basic sciences than to accumulate credits in many courses. He should learn how to work independently, to observe critically and to analyze rather than merely to store the information presented. Good study habits and use of time are perhaps the most important tools a student can bring to the study of medicine. His choice of studies beyond those required for admission should be governed by his own chief interests and by the intellectual stimulus to be derived from the work. In general he should avoid courses in subjects which are included in the medical curriculum.

Application for Admission

Application forms may be obtained by writing to the Secretary of Admissions, Box 3710, Duke Hospital, Durham, N. C. Please do not send a request before August 15th. Formal applications will be accepted by the Committee on Admissions only between 15 August and 1 December.

Due to the large number of qualified applicants to all medical schools, each student is urged to apply to at least four schools. In the event an applicant is accepted by another school before he has heard from Duke, and is forced to secure that acceptance with a deposit, he may request an earlier consideration by our Committee.

Requirements for Admission

1. A minimum of ninety semester hours of approved college credit is necessary for admission to the school. It must include:

(1) Two years of English of which the second year should be chiefly expository English composition.
(2) Two years of chemistry, the first inorganic and the second analytic and organic.
(3) One year of college physics.
(4) One year of biology.
(5) One year of mathematics.

2. Medical College Admission Test. This test is required of all applicants. It is administered by the Educational Testing Service, P. O. Box 592, Princeton, New Jersey. This test is given at many of the colleges throughout the country in May and November of each year. Arrangements for taking this test should be made by the student through his premedical advisor.

Selection

Selection is made between September 15 and February 15 for the students entering the following September. The data on each candidate are carefully screened by the Committee on Admissions. A personal interview will be arranged for those with satisfactory credentials. If the distance from Durham is permissible the interview is conducted here; otherwise the candidates are referred to our regional representatives. Many factors are evaluated by the Committee in the selection process. In the end those students are admitted who show the most promise for exceptional future practice of medicine. The candidate is notified as soon as possible whether or not he has been accepted. If he has been accepted it is necessary to send a deposit of $50.00 by the succeeding January 15 in order to insure enrollment. This deposit is applied toward tuition. Inasmuch as admission must be offered a considerable period in advance of matriculation the admission must be provisional upon the successful completion of the remaining college work. In addition a physical examination is necessary prior to enrollment.

Advanced Standing

Applications for transfer into the second and third year classes will be considered only if space permits. No applications for entrance to the fourth year will be considered. For entrance to the third year, Part I of the National Board Examination will be required as evidence of satisfactory accomplishment in the subjects of the first two years.

Transfers from foreign medical schools will be accepted into the third year class only in January. During the following two terms of nine-weeks each, they will divide their time between; (1) Clinical Microscopy, Physical Diagnosis and Psychiatry, and (2) the completion of the nine-week elective term (for these students a committee will plan the elective programs on the basis of the needs and interests of each of the students), (3) during the next two years, the number of these transfers admitted will be limited to ten per year, (4) by attending two summers, they can complete their training on the second November first (that is, they will be graduated about six months late).

Regional Representatives of the Committee on Admission

California
- Los Angeles — Jeremiah W. Kerner
- Pasadena — Robert H. Pudenz
- San Francisco — Emile F. Holman
- Stanford — Charles H. Danforth

Canada
- Montreal — J. Lamar Roberts

Colorado
- Denver — F. Vernon Altvater

Connecticut
- New Haven — Allan K. Poole

Florida
- Jacksonville — Edward Jelks
- Lakeland — Charles Larsen, Jr.
- Tampa — Richard G. Connar

Georgia
- Atlanta — E. B. Dunlap, Jr.

Idaho
- Idaho Falls — Reid H. Anderson

Illinois
- Chicago — George H. Gardner

Iowa
- Iowa City — Arthur L. Benton

Kansas
- Kansas City — Ralph H. Major
- Wichita — Thomas Jager

Kentucky
- Lexington — Kearns R. Thompson
- Louisville — Malcolm D. Thompson

Louisiana
- New Orleans — Philip H. Jones

Maryland
Baltimore ..... JOHN T. KING, JR.
Baltimore ..... CHARLES E. LEACH

Massachusetts
Boston ..... JAMES H. CURRENS
Brookline ..... DOROTHY A. ELIAS
Brookline ..... JAMES L. TULLIS

Michigan
Ann Arbor ..... MURIEL MEYERS
Port Huron ..... WILLIAM T. DAVISON

Minnesota
Rochester ..... W. H. HOLLINSHEAD

Missouri
Kansas City ..... ROBERT H. BARNES
St Louis ..... THOMAS B. FERGUSON

New Hampshire
Hanover ..... ROBERT J. VANDERLINDE

New York
New York City ..... JULIA M. JONES
New York City ..... RICHARD A. RUSKIN
New York City ..... BERTRAM J. SANGER
Syracuse ..... PHILIP P. ARMSTRONG

Ohio
Cleveland ..... B. S. KLINE
Columbus ..... CHARLES A. DOAN
Dayton ..... R. L. JOHNSTON
Toledo ..... JOHN L. STIFEL

Oklahoma
Tulsa ..... GERALD E. CRONK

Oregon
Portland ..... RICHARD R. CARTER
Portland ..... KARL H. MARTZLOFF

Pennsylvania
Johnstown ..... W. FREDERIC MAYER
Palmerton ..... R. P. BATCHELOR
Pittsburgh ..... JACK D. MYERS
Philadelphia ..... MAX W. FISCHBACH
Philadelphia ..... KARL C. JONAS
Philadelphia ..... ASHTON B. MORRISON

Rhode Island
Providence ..... MARSHALL N. FULTON

South Carolina
Charleston ..... EDWARD F. PARKER
Charleston ..... J. I. WARING
Columbia ..... JAMES H. GIBBES
Columbia ..... BEN N. MILLER
Columbia ..... WILLIAM WESTON
Greenville ..... RAYMOND C. RAMAGE

Tennessee
Chattanooga ..... RICHARD VAN FLETCHER
Memphis ..... RAPHAEL E. SEMMES

Nashville.....Sam L. Clark
Sewanee.....Henry T. Kirby-Smith

Texas

Dallas.....A. James Gill
Galveston.....A. E. Hansen
Houston.....H. Grant Taylor
San Antonio.....Royall M. Calder
San Antonio.....P. I. Nixon

Utah

Salt Lake City.....Thomas Ray Broadbent

Virginia

Charlottesville.....Henry B. Mulholland

Washington

Seattle.....W. A. MacColl

West Virginia

Charleston.....Harold H. Kuhn
Huntington.....George M. Lyon

Wisconsin

Madison.....O. A. Mortensen

Curriculum

The academic year consists of thirty-six weeks. For third and fourth-year students there will be four terms of nine weeks each. In the first two years the instructional program does not adhere rigidly to the above terms, but rather involves interdepartmental correlations. The third year is made up of nine-week terms of medicine, surgery, obstetrics-gynecology and psychiatry. The fourth year is comprised of nine-week terms of medicine, surgery and pediatrics and one term as an elective. Elective courses have been organized for small groups, or the time may be utilized in independent work (including research) in any department, clinical or preclinical. Arrangements for taking such courses or doing other work are made through the Curriculum Committee. The entire curriculum is shown in the accompanying table.

Students are encouraged to take a portion of their medical school work at other schools. Permission must be obtained in advance from the Committee on Health Affairs and the full tuition at Duke must be paid for that quarter. If the charges at the school at which the work is taken are less than those at Duke they will be paid by Duke and if more the difference must be made up by the student. At the completion of the work in another school an examination in the subject may be conducted by the department at this medical school.

Distribution of Clock Hours

	1st Year	*2nd Year*	*3rd Year*	*4th Year*
Anatomy	537			
Biochemistry	268			
Physiology	268			
Psychiatry	72	88	369	
Microbiology		224		
Pathology		340		
Clin. Mic.		125		
Clinical Diag.		208		
Prev. Med. & Pub. Health		14		
Surgery		28	369	369
Pharmacology	3	135		
Correlation Clinics		24		
Radiology	3			
Ob. Gyn.			369	
Pediatrics				369
Medicine	6		369	369
Orientation	13			
Electives		50		369
Free Time	306	240		
Total	1,476	1,476	1,476	1,476

Promotion

Promotion committees composed of the heads of the departments offering instruction in those years periodically review the records of students. The Committee on Health Affairs, acting on recommendations of the promotion committees promotes those qualified, warns those whose work is unsatisfactory, places on probation those whose work is very unsatisfactory and requests the resignation of those considered unpromising candidates for the degree Doctor of Medicine. A student wishing to appeal this decision may do so to the chairman of the Committee on Health Affairs within two weeks of his notification.

The Committee on Health Affairs reserves the right to require the withdrawal of any student at any time if, in the opinion of the majority of its members, he should not continue his course.

At the end of the second year a comprehensive examination will be given covering the work of the first two years. Each student will be requested to take Part I of some State Board examination or the National Boards.

Financial Information

Fees and Expenses

Listed below is a table of the approximate expenses per nine months academic year of the School of Medicine:

Tuition and fees	$1200.00
Board	600.00
Room	270.00
Books	100.00
Laundry	100.00
Insurance, instruments and incidentals*	150.00
	$2420.00

One fourth of the total fees is payable at the beginning of each nine-week term. A fine of $5.00 is charged for late registration after the first 5 days of the term. No credit will be given for any term in which the tuition has not been paid whether the work has been done here or elsewhere.

It is not advisable for students to attempt outside work to defray their expenses during the academic year. The curriculum is so crowded that the results usually are disastrous to their health and academic standing.

Angier B. Duke Memorial and Other Loan Funds

Medical students, after their first year, may apply for tuition loans from the Angier B. Duke Memorial, the Francis and Elizabeth Swett and the W. K. Kellogg Foundation funds. No University scholarships are awarded in the School of Medicine. The loan funds are administered in accordance with the following regulations:

1. No loan will be made to a student who violates any of the regulations of the University or who is not doing outstanding classwork.

2. Loans will be made only to students who are taking full courses of study that lead to a degree, and all loans must be arranged not later than one week after the beginning of a quarter.

3. Every applicant for a loan must present with the application such security as the President of the University may approve, and no

* Microscope, sphygmomanometer, ophthalmoscope, otoscope, and other equipment, which are required of each student and which must conform to rigid standards, may be obtained on a rental basis from the University.

money will be advanced before a note with approved security is in the hands of the Treasurer of the University.

North Carolina State Loans

The State of North Carolina has established a student loan fund for worthy students who agree to practice in a North Carolina rural area or small town of less than 2500 population for at least four years after the completion of their professional training. To be eligible a student must have been a resident of North Carolina for the past eight years. The maximum loan to a medical student is $1,200.00 per academic year ($4,800.00 for a four year period). The student who receives a loan must immediately following completion of the four year medical course take a rotating internship of one year and if approved by the Medical Care Commission he will have the option of continuing the internship through a second year. Detailed information can be obtained from the North Carolina Medical Care Commission, Post Office Box 1880, Raleigh, North Carolina.

Fred and Betty Hanes Scholarship in Medicine

"Established in 1959 by Mrs. Robert Lassiter and sons in memory of Dr. and Mrs. Hanes."

Frederic M. Hanes Student Fellowships

Any Duke medical student after his first year is eligible for a leave of absence and a Fellowship of $175 per month for full-time research work at Duke with special emphasis in a preclinical subject. These Fellowships will be granted on the recommendation of the Committee on Health Affairs for a period of six months, but may be renewed. Information may be obtained from Dr. David T. Smith.

Awards to Medical Students and Interns

(Information may be obtained from the Dean's Office)

Borden Undergraduate Research Awards in Medicine

An award of $500 may be given to the Duke Senior who, in the opinion of the Committee on Health Affairs has performed the best research work during his or her entire medical course, including that done during the preclinical years, or he can submit his thesis for the B.S. degree in Medicine. *Applicants should submit their papers,*

articles or reprints to the Dean at least three months prior to expected date of graduation.

Robert U. Young Award

Friends and classmates of the late Robert U. Young (M.D. '51) support an award consisting of all the equipment needed, except microscope, for a student selected by the Dean or his authorized representative.

Trent Prize in the History of Medicine

An annual award of fifty dollars for the best original and publishable essay on any topic in the history of medicine or its allied sciences by a Duke medical student or house-officer has been established by Mrs. Mary Trent Semans in memory of the late Dr. Josiah C. Trent, who had been Assistant Professor of Surgery in Charge of Thoracic Surgery at Duke, and who had greatly increased the interest of the staff and students in medical history. Essays should be submitted to Dr. Joseph E. Markee, the Chairman of the Trent Award Committee, by April 1 of the year in which they are to be considered.

The J. C. Trent Memorial Lecture

The Josiah C. Trent Medical History Society, sponsors this lectureship, established by Mrs. Mary Trent Semans in memory of the late Dr. Josiah C. Trent. This lecture brings to the medical school outstanding speakers in medical history, medical education, history of science philosophy and the history of ideas.

Mosby Awards

A text or reference book from the C. V. Mosby catalog may be selected by each of the five best seniors.

Merck Award

Merck and Company donates complimentary copies of The Merck Manual to two outstanding seniors.

Departments of Instruction

Anatomy

Joseph E. Markee, Ph.D. (Chicago, 1929), *James B. Duke Professor of Anatomy, Chairman of the Department, and Assistant Dean in Charge of Admissions.*

John W. Everett, Ph.D. (Yale, 1932), *Professor of Anatomy.*

Duncan C. Hetherington, Ph.D. (Illinois, 1922), M.D. (Johns Hopkins, 1926), *Professor of Anatomy.*

R. Frederick Becker, Ph.D. (Northwestern, 1940), *Associate Professor of Anatomy.*

W. Kenneth Cuyler, Ph.D. (Duke, 1941), *Associate Professor of Cytology and Anatomy.*

Kenneth L. Duke, Ph.D. (Duke, 1940), *Associate Professor of Anatomy.*

Talmage L. Peele, M.D. (Duke, 1934), *Associate Professor of Anatomy and Assistant Professor of Pediatrics and Neurology.*

Montrose J. Moses, Ph.D. (Columbia, 1949), *Associate Professor of Anatomy.*

John A. Goree, M.D. (Duke, 1955), *Associate in Anatomy and Associate in Radiology.*

Frederick D. McFalls, M.D. (Duke, 1959), *Instructor in Anatomy.*

Joseph Wells, Ph.D. (Duke, 1959), *NIH Fellow and Instructor in Anatomy.*

Sam A. Agnello, A.B. (Duke, 1939), *Administrative Assistant.*

The required courses of instruction in human anatomy constitute about half of the integrated curriculum of the first year. The gross anatomy of the head, neck and trunk is studied during the first 14 weeks, histology during the first 10 weeks, neuroanatomy during the 28th to 36th weeks. The gross anatomy of the limbs is studied during the 28th to 36th weeks. All of the above are integrated with the other material studied during the first year. Emphasis is placed upon the study of the material in the laboratory. In an attempt to utilize more fully the laboratory time, audio-visual educational methods are employed as fully as possible. These techniques consist of colored motion pictures of demonstration dissections, colored lantern slides, and motion pictures, both embryologic and neurologic. All of the instruction is designed to be as informal and as nearly individual as possible. General principles and the functional viewpoint of living anatomy are stressed in the hope that the student may be stimulated to secure a working knowledge of anatomy in the broadest sense. Whenever possible, fresh tissues and living cells are made available for examination, and clinical cases exemplifying anatomical principles are studied whenever they are available. Through the co-operation of the Department of Radiology, the students are given an opportunity

to study portions of the living human body as revealed by the fluoroscope and roentgenograph. The following elective courses are offered:

Demonstrations in Anatomy. Using dissections already prepared, weekly demonstrations of selected regions or systems are made by the members of the group. Sixth quarter—Two hours per week by arrangement. Second-year students in groups of 10.

Review in Anatomy. During the sixth quarter, a review in anatomy will be presented by the audio-visual education methods outlined above, covering gross and neuro- anatomy, and histology.

Special Neuro-anatomy. Laboratory work and conferences upon selected portions of the human central nervous system. Limited to 6 junior or senior students. Two hours weekly by arrangement.

Brain modeling. Free-hand reconstruction in clay, from gross and sectioned material, of the chief tracts and nuclei of the human brain stem. By arrangement—4 to 10 students.

Experimental Neurology. An operative and laboratory study of the effect of various lesions upon the central and peripheral portions of the nervous system. 4 to 8 junior and senior students by arrangement. Prerequisite—operative surgery.

Advanced Studies in Anatomy. These may be arranged at any time under the direction of the various members of the staff.

Review for Orthopaedic Anatomy. A one hour weekly review of the anatomy related to orthopaedic surgery.

Review of Surgical Anatomy. A one hour weekly review of the anatomy related to general surgery.

Anatomy Seminar. One hour weekly meeting of students and staff in which current research problems in anatomy are presented.

Biochemistry

Philip Handler, Ph.D. (Illinois, 1939), *Professor of Biochemistry and Nutrition, and Chairman of the Department.*

Mary L. C. Bernheim, Ph.D. (Cambridge, 1928), *Associate Professor of Biochemistry.*

Jerome S. Harris, M.D. (Harvard, 1933), *Associate Professor of Biochemistry, and Professor of Pediatrics.*

Haywood M. Taylor, Ph.D. (UNC, 1924), *Associate Professor of Biochemistry and Professor of Toxicology.*

James B. Wyngaarden, M.D. (Michigan, 1948), *Associate Professor of Medicine and Biochemistry.*

Kenneth S. McCarty, Ph.D. (Columbia, 1957), *Associate Professor of Biochemistry.*

Henry Kamin, Ph.D. (Duke, 1948), *Assistant Professor of Biochemistry and Scientist at the Durham VA Hospital.*

William L. Byrne, Ph.D. (Wisconsin, 1953), *Assistant Professor of Biochemistry.*

Sahli J. Wakil, Ph.D. (Washington, 1952), *Assistant Professor of Biochemistry.*

Eugene A. Davidson, Ph.D. (Columbia, 1955), *Assistant Professor of Biochemistry.*

Norman Kirshner, Ph.D (Pennsylvania State, 1952), *Associate in Biochemistry and Assistant Professor of Experimental Surgery.*

William S. Lynn, M.D. (Columbia, 1946), *Associate in Biochemistry, Assistant Professor of Medicine, and Markle Scholar.*

Irwin Fridovich, Ph.D. (Duke, 1955), *Associate in Biochemistry, USPHS Senior Fellow.*

Ronald H. Greene, Ph.D. (California Institute of Technology, 1954), *Associate in Biochemistry and Biochemist, Durham VA Hospital.*

Theodore Rosett, Ph.D. (London, 1955), *Instructor in Biochemistry.*

Leo B. Daniels, *Technical Associate in Biochemistry.*

FELLOWS

Francise G. Carey, Ph.D. (Yale, 1959), *Post-Doctoral Fellow in Biochemistry.*

Robert M. MacLeod, Ph.D. (Duke, 1959), *Research Fellow in Biochemistry.*

Rita C. Wissel, M.D. (Georgetown, 1954), *USPHS Fellow in Biochemistry.*

Francois Chapeville, D.Sc. (Sorbonne, 1956), *Research Fellow in Biochemistry.*

Jayant G. Joshi, Ph.D. (Poona, 1957), *Research Fellow in Biochemistry.*

K. V. Rajagopalan, Ph.D. (Madras, 1957), *Research Fellow in Biochemistry.*

Leon S. Dure, Ph.D. (Texas, 1959), *Research Fellow in Biochemistry.*

Rubin Bressler, M.D. (Duke, 1957), *Research Associate in Biochemistry.*

The required course in biochemistry for first-year students is given over a period of twenty weeks in mid-year. The first phase is devoted to a survey of the chemistry of the materials fundamental to all life, proteins, fats and carbohydrates, and the nature of enzymatic action. This is followed by consideration of those events in intermediary metabolism common to the life of all mammalian cells. The special metabolism of muscle, kidney, bone, erythrocytes, liver, connective tissue, and the chemical aspects of digestion, respiration, electrolyte, acid-base and fluid balance are presented with relation to the study of the physiology of these organs so as to facilitate integration and correlation of the two disciplines.

Since the success of the students in this course is largely determined by the adequacy and ready availability of their premedical training, it is urged that all students review the fundamental laws, theories, and facts of chemistry before the beginning of the course. A circular outlining the topics requiring special attention is sent to all students upon admission. Additional copies of the circular may be obtained from the Dean's Office.

Biochemical Research. The facilities of the department, including various types of research equipment and the clinical material of the blood chemistry laboratory, are available to properly qualified students for independent or supervised investigations. Chemical investigations of problems in biochemistry or in conjunction with the clinical and pathologic departments also may be conducted.

Chemistry of Proteins and Enzymes. A two-hour seminar is given weekly throughout the autumn, winter and spring terms in alternate years.

Intermediary Metabolism. A two-hour lecture course and seminar conducted during autumn, winter, and spring terms. Given annually.

Advanced Seminar in Nutrition. A three-hour lecture and seminar course in modern nutritional concepts. Given alternately with intermediary Metabolism during the autumn term.

Biochemistry of Disease. A seminar course meeting once weekly to discuss the etiology and pathogenesis of metabolic diseases from the biochemical viewpoint. Given in alternate years in the spring term.

Medicine

Eugene Anson Stead, Jr., M.D. (Emory, 1932), *Florence McAlister Professor of Medicine and Chairman of the Department.*

J. Lamar Callaway, M.D. (Duke, 1932), *Professor of Dermatology.*

Frank L. Engel, M.D. (Johns Hopkins, 1938), *Professor of Medicine and Associate Professor of Physiology.*

Oscar C. E. Hansen-Prüss, M.D. (Johns Hopkins, 1924), *Professor of Medicine.*

Walter Kempner, M.D. (Heidelberg, 1927), *Professor of Medicine.*

E. Charles Kunkle, M.D. (Cornell, 1939), *Professor of Neurology.*

Elijah E. Menefee, Jr., M.D. (Duke, 1936), *Professor of Medicine.*

William M. Nicholson, M.D. (Johns Hopkins, 1931), *Professor of Medicine in Charge of Diseases of Metabolism and Assistant Dean in Charge of Postgraduate Education.*

Edward S. Orgain, M.D. (Virginia, 1930), *Professor of Medicine.*

Elbert L. Persons, M.D. (Harvard, 1927), *Professor of Medicine, Director of Student Health, and Associate Professor of Preventive Medicine and Public Health.*

Julian M. Ruffin, M.D. (Virginia, 1926), *Professor of Medicine.*

R. Wayne Rundles, M.D. (Duke, 1940), *Professor of Medicine.*

Morton D. Bogdonoff, M.D. (Cornell, 1948), *Associate Professor of Medicine.*

E. Harvey Estes, M.D. (Emory, 1947), *Associate Professor of Medicine and Chief, Medical Service, Durham VA Hospital.*

James P. Hendrix, M.D. (Pennsylvania, 1930), *Associate Professor of Medicine and Therapeutics.*

Albert Heyman, M.D. (Maryland, 1940), *Associate Professor of Neurology.*

Grace P. Kerby, M.D. (Duke, 1946), *Associate Professor of Medicine.*

William S. Lynn, M.D. (Columbia, 1946), *Associate Professor of Medicine, Associate in Biochemistry, and Markle Scholar.*

Henry D. McIntosh, M.D. (Pennsylvania, 1950), *Associate Professor of Medicine.*

Harry T. McPherson, M.D. (Duke, 1948), *Associate Professor of Medicine.*

John B. Pfeiffer, M.D. (Cornell, 1942), *Associate Professor of Neurology.*

Herbert O. Sieker, M.D. (Washington Univ., 1948), *Associate Professor of Medicine.*

David T. Smith, M.D. (Johns Hopkins, 1922), *Associate Professor of Medicine, and James B. Duke Professor of Bacteriology.*

Malcolm P. Tyor, M.D. (Duke, 1946), *Associate Professor of Medicine.*

James B. Wyngaarden, M.D. (Michigan, 1948), *Associate Professor of Medicine and Associate Professor of Biochemistry.*

John R. Overman, M.D. (Duke, 1950), *Assistant Professor of Medicine and Associate Professor of Bacteriology.*

Talmage L. Peele, M.D. (Duke, 1934), *Assistant Professor of Neurology, Associate Professor of Anatomy and Assistant Professor of Pediatrics.*

Ernst Peschel, M.D. (Berlin, 1930), *Assistant Professor of Medicine.*

Albert E. Pugh, M.D. (Kansas, 1941), *Assistant Professor of Medicine.*
Evelyn Coonrad, M.D. (Duke, 1948), *Associate in Medicine.*
Macdonald Dick, M.D. (Johns Hopkins, 1928), *Associate in Medicine and Assistant Professor of Physiology and Pharmacology.*
Walter L. Floyd, M.D. (Johns Hopkins, 1954), *Associate in Medicine.*
Thomas T. Jones, M.D. (Johns Hopkins, 1932), *Associate in Medicine.*
John Laszlo, M.D. (Harvard, 1955), *Associate in Medicine.*
Barbara Newborg, M.D. (Johns Hopkins, 1949), *Associate in Medicine.*
Suydam Osterhout, M.D. (Duke, 1950), Ph.D. (Rock. Inst., 1959), *Associate in Medicine and Microbiology.*
Richard M. Portwood, M.D. (Southwestern, 1954), *Associate in Medicine.*
Herbert A. Saltzman, M.D. (Philadelphia, 1952), *Associate in Medicine.*
Charles W. Styron, M.D. (Duke, 1938), *Associate in Medicine.*
John V. Verner, M.D. (Duke, 1954), *Associate in Medicine.*
John M. Wallace, M.D. (Washington Univ., 1950), *Associate in Medicine.*
Arnold M. Weissler, M.D. (N. Y. State, Brooklyn, 1953), *Associate in Medicine.*
J. Earle White, M.D. (Emory, 1952), *Associate in Medicine.*
James O. Wynn, M.D. (Cornell, 1951), *Associate in Medicine.*
Sherwood W. Barefoot, M.D. (Duke, 1938), *Instructor in Dermatology.*
Woodrow W. Batten, M.D. (Bowman Gray, 1944), *Instructor in Medicine.*
Angieneta A. Biegel, M.D. (Leyden, 1954), *Instructor in Medicine.*
Paul C. Campbell, M.D. (Buffalo, 1936), *Instructor in Dermatology.*
Albert D. Cooper, M.D. (George Washington, 1932), *Instructor in Medicine.*
George W. Crane, M.D. (Northwestern, 1946), *Instructor in Dermatology.*
Noble J. David, M.D. (Duke, 1952), *Instructor in Neurology.*
Raymond T. Doyle, M.D. (Johns Hopkins, 1953), *Instructor in Medicine*
John T. Eagan, M.D. (Johns Hopkins, 1953), *Instructor in Medicine.*
Samuel L. Elfmon, M.D. (Med. Coll. of Va., 1935), *Instructor in Medicine.*
Ben R. Risch, M.D. (Southwestern, 1949), *Instructor in Medicine.*
Walter C. Fitzgerald, M.D. (Virginia, 1943), *Instructor in Dermatology.*
Samuel J. Friedberg, M.D. (Pennsylvania, 1952), *Instructor in Medicine.*
Thomas E. Fulmer, M.D. (South Carolina, 1954), *Instructor in Medicine.*
William L. Gleason, M.D. (Duke, 1952), *Instructor in Medicine.*
Thomas E. Hair, M.D. (Duke, 1954), *Instructor in Medicine.*
Marion D. Hargrove, M.D. (Tulane, 1954), *Instructor in Medicine.*
S. Frank Horne, M.D. (Duke, 1942), *Instructor in Dermatology.*
Richard R. Horswell, M.D. (Northwestern, 1955), *Instructor in Medicine.*
H. LeRoy Izlar, M.D. (Duke, 1946), *Instructor in Medicine.*
James H. Johnson, M.D. (Virginia, 1954), *Instructor in Medicine.*
Olafur O. Jonsson, M.D. (Iceland, 1955), *Instructor in Medicine.*
Thomas D. Long, M.D. (Bowman Gray, 1952), *Instructor in Medicine.*
Emmett S. Lupton, M.D. (N.Y.U., 1938), *Instructor in Dermatology.*
Walter C. Lusk, M.D. (Emory, 1950), *Instructor in Medicine.*
Felice Manfredi, M.D. (Rome, 1949), *Instructor in Medicine.*
Joseph P. McCracken, M.D. (Duke, 1937), *Instructor in Medicine.*
Graham D. Newton, M.D. (Cornell, 1954), *Instructor and Resident in Dermatology.*
Jack G. Robbins, M.D. (Duke, 1948), *Instructor in Dermatology.*
William V. Singletary, M.D. (Duke, 1943), *Instructor in Medicine.*
Julian C. Sleeper, M.D. (Washington Univ., 1954), *Instructor in Medicine.*
Howard K. Thompson, M.D. (Columbia, 1953), *Instructor in Medicine.*

Kenneth D. Weeks, M.D. (Duke, 1939), *Instructor in Medicine.*
Robert E. Whalen, M.D. (Cornell, 1956), *Instructor and Resident in Medicine.*
Robert W. Willett, M.D. (Duke, 1948), *Instructor in Neurology.*
George E. Koury, M.D. (Tulane, 1944), *Assistant in Medicine.*
Ruth L. Peschel, M.D. (Berlin, 1931), *Research Assistant in Medicine.*
Clotilde Schlayer, Ph.D. (Heidelberg, 1927), *Research Assistant in Medicine.*
Preston W. Smith, *Technical Associate in Clinical Microscopy.*

FELLOWS

William G. Blackard, M.D. (Duke, 1957)
H. Augus Boright, M.D. (McGill, 1955)
Tom W. Gore, M.D. (Duke, 1955)
O. William Jones, M.D. (Oklahoma, 1957)
Robert F. Klein, M.D. (Ala., 1955)
Harold E. Lebovitz, M.D. (Pittsburgh, 1956)
Hiroshi Nagaya, M.D. (Tokyo, 1956)
Richard A. Obenour, M.D. (Tennessee, 1955)
Edward E. Owen, M.D. (Washington Univ., 1956)
Robert G. Peeler, M.D. (Johns Hopkins, 1955)
Walter H. Roehll, M.D. (Cincinnati, 1955)
J. Herbert West, M.D. (Bowman Gray, 1955)

ASSISTANT RESIDENTS

Irwin A. Brody, M.D. (Pennsylvania, 1956)
W. Kenneth Blaylock, M.D. (Med. Coll., Va., 1958)
Rubin Bressler, M.D. (Duke, 1957)
Charles E. Buckley, M.D. (Duke, 1954)
Allan I. Cohen, M.D. (Rochester, 1958)
Jack T. Collins, M.D. (Western Reserve, 1956)
Thomas M. Constantine, M.D. (Duke, 1954)
E. Andrew Deiss, M.D. (Duke, 1956)
Arthur L. Finn, M.D. (Boston, 1958)
Robert L. Fischer, M.D. (Cornell, 1958)
Gunhild Gislerud, M.D. (Oslo, 1947)
Hillel J. Gitelman, M.D. (Rochester, 1958)
J. Caulie Gunnells, M.D. (South Carolina, 1956)
William R. Harlan, M.D. (Med. Coll., Va., 1955)
Rafael R. Hernandez, M.D. (Duke, 1958)
James C. Hurlburt, M.D. (Duke, 1958)
Edith Hutto, M.D. (South Carolina, 1958)
Gordon H. Ira, M.D. (Duke, 1955)
Marvin Kahn, M.D. (Johns Hopkins, 1958)
Joseph Katz, M.D. (Med. Coll., Ga., 1954)
Eugene R. Kelly, M.D. (Columbia, 1957)
Lipman J. Klein, M.D. (Louisville, 1957)
Martin E. Liebling, M.D. (Washington Univ., 1955)
John A. Marascalco, M.D. (Tulane, 1956)
Dean T. Mason, M.D. (Duke, 1958)
Ben S. McCall, M.D. (Duke, 1955)
John J. McPhaul, M.D. (Georgetown, 1956)

Charles R. Merwarth, M.D. (Duke, 1955)
D. Edmond Miller, M.D. (Duke, 1956)
Irwin B. Moore, M.D. (Duke, 1958)
David S. Newcombe, M.D. (McGill, 1956)
Charles E. Rackley, M.D. (Duke, 1958)
Wendell F. Rosse, M.D. (Chicago, 1958)
Kambuzia Tabari, M.D. (Duke, 1959)
Andrew G. Wallace, M.D. (Duke, 1959)

INTERNS

Robert S. Adelstein, M.D. (Harvard, 1959)
C. Vinson Alexander, M.D. (Duke, 1959)
Robert K. Blount, M.D. (Duke, 1960)
Henry S. Campell, M.D. (Duke, 1960)
Arthur C. Chandler, M.D. (Duke, 1959)
Fred M. Downey, M.D. (George Washington, 1959)
Robert E. Gaddy, M.D. (Duke, 1959)
Ferd E. Garrison, M.D. (Baylor, 1959)
John S. Gaskin, M.D. (Duke, 1960)
John G. Glover, M.D. (Duke, 1959)
Harvey E. Grode, M.D. (Duke, 1960)
H. Courtenay Harrison, M.D. (Duke, 1959)
Charles P. Hayes, M.D. (Duke, 1959)
James T. Higgins, M.D. (Duke, 1959)
Richard J. Hildebrandt, M.D. (Duke, 1959)
Marvin Lewis, M.D. (Pittsburgh, 1959)
Myron B. Liptzin, M.D. (Rochester, 1959)
Melvin Litch, M.D. (Duke, 1959)
Frank M. Mauney, M.D. (Duke, 1959)
Alan L. Morgenstern, M.D. (Duke, 1959)
James J. Morris, M.D. (N. Y. State, 1959)
Stewart R. Roberts, M.D. (Emory, 1959)
Lloyd H. Robertson, M.D. (Duke, 1960)
Robert G. Sumner, M.D. (Cornell, 1959)
Donald K. Wallace, M.D. (Duke, 1959)
Temple W. Williams, M.D. (Baylor, 1959)

Clinical Diagnosis. This course is initiated in the third term of the second year by introductory lectures, case discussions, and instruction in methods of physical examination and history taking. Early in the course, students begin work at the bedside in the examination of selected patients. The emphasis throughout is placed on instruction individually and in small groups. The interpretation and pathologic physiology of abnormal findings are stressed. Instruction in the more specialized methods of examination is provided by coordinating the lectures, case discussions and individual student instruction from the departments of Medicine, Neurology, Obstetrics and Gynecology, Pediatrics, Psychiatry, Radiology, and Surgery. In addition, the lectures and laboratory sessions in Clinical Microscopy

are coordinated with the over-all program. This plan of teaching continues in the fourth quarter, when special emphasis is placed on student correlation of the history, physical findings, and pathologic physiology in the individual patient problem.

Clinical Microscopy is given in the second year. This course, along with lectures and assignments providing practice in history taking and physical diagnosis, comprises an introduction to medicine designed to equip the student to participate in patient care on the wards and in the clinics. The essentials of hematology are reviewed. Laboratory work includes blood cell counts, the preparation and interpretation of blood films, and the examination of fresh material, such as urine, stools, spinal fluids, sputum, transudates, and exudates. Second-year and senior students are given opportunities for special work and for investigation. This course is supplemented in the junior and senior years by hematology conferences and by daily ward and laboratory rounds.

Cutaneous Medicine and Syphilology. Instruction consisting of lectures, seminars, the study and treatment of patients in the outpatient clinics and on the wards is offered.

Junior and Senior Medicine. The medical students are assigned as clinical clerks to the medical wards of Duke Hospital and the Durham VA Hospital and to the medical outpatient clinic.

Division of Endocrinology

Frank L. Engel, M.D. (Johns Hopkins, 1938), *Professor of Medicine and Associate Professor of Physiology* (Director).

Edwin C. Hamblen, M.D. (Virginia, 1928), *Professor of Endocrinology and Associate Professor of Obstetrics and Gynecology* (Emeritus Director).

Roy Turnage Parker, M.D. (Med. Coll., Va., 1944), *Associate Professor of Obstetrics and Gynecology.*

Harry T. McPherson, M.D. (Duke, 1948), *Associate Professor of Medicine* (Director of Endocrine Laboratory) (Duke).

Charles Henry Peete, Jr., M.D. (Harvard, 1947), *Assistant Professor of Obstetrics and Gynecology.*

Robert S. Stempfel, Jr., M.D. (Vanderbilt, 1952), *Assistant Professor of Pediatrics.*

Violet H. Turner, M.D. (Chicago, 1940), *Assistant Professor of Obstetrics and Gynecology.*

Jack L. Kostyo, Ph.D. (Cornell, 1957), *Assistant Professor of Physiology.*

Richard M. Portwood, M.D. (Southwestern, 1954), *Associate in Medicine.*

J. Earle White, M.D. (Emory, 1952), *Associate in Medicine* (Durham VA Hospital).

James O. Wynn, M.D. (Cornell, 1951), *Associate in Medicine* (Durham VA Hospital).

John V. Verner, M.D. (Duke, 1954), *Associate in Medicine* (Metabolism-Diabetes Clinic) (Duke)

FELLOWS AND GRADUATE STUDENTS

William G. Blackard, M.D. (Duke, 1957), *Medicine.*

H. Angus Boright, M.D. (McGill, 1955), *Medicine.*

Francisco L. Garcia, M.D. (Javeriana, Bogota, 1950), *Obstetrics and Gynecology.*
Shirley E. Kirkman, M.D. (Duke, 1957), *Pediatrics.*
Harold E. Lebovitz, M.D. (Pittsburgh, 1956), *Medicine.*
Enrique Onetto, M.D. (Chile, 1952), *Obstetrics and Gynecology.*
Guy Onghena, M.D. (Ghent, Belgium, 1954), *Obstetrics and Gynecology.*
Alberto Padua, M.D. (Caracas, 1948), *Obstetrics and Gynecology.*
Aram Sukanthanak, M.D. (Siriraj, 1950), *Obstetrics and Gynecology.*
J. Herbert West, M.D. (Bowman Gray, 1955), *Medicine.*

The Division of Endocrinology was organized by Dr. E. C. Hamblen in 1936 as a division of the Department of Obstetrics and Gynecology. In 1955 it was reorganized as an integrated service with a staff drawn from several clinical and preclinical departments. Its objective is to give comprehensive training in basic and clinical endocrinology and metabolism particularly at the postgraduate level. Although individual senior staff members have their own special clinical and research programs, the division is organized so that clinics, conferences, ward rounds and seminars are participated in as joint ventures by the entire staff. The endocrine laboratory and its services are available to all members of the staff equally. Resident physicians from Medicine, Obstetrics and Gynecology and Pediatrics rotate through the endocrine division. At any one time there are usually four residents assigned to the division. Clinical and research fellows and trainees are assigned to individual senior staff members, depending on their major interest, but all participate essentially equally in the clinics, teaching rounds, conferences, etc.

The Endocrine Clinic meets three mornings and the Metabolism-Diabetes Clinic one morning each week. All fellows have the opportunity to attend these clinics and in addition the clinical fellows assist in the care of the private patients with endocrine and metabolic disturbances including diabetes. Twice a month the endocrine clinic meets jointly with the neurosurgical tumor follow-up clinic to review patients with pituitary tumors and related brain lesions. Ward rounds on in-patients are held from 4-5 P.M. four afternoons a week. An endocrine conference is conducted weekly. In addition, each of the supporting service (Medicine, Obstetrics and Gynecology and Pediatrics) has special conferences, lectures and seminars of endocrine interest which are available to the staff.

Microbiology

Norman F. Conant, Ph.D. (Harvard, 1933), *Professor of Microbiology and Chairman of the Department.*
David T. Smith, M.D. (Johns Hopkins, 1922), *James B. Duke Professor of Microbiology, and Associate Professor of Medicine.*
Joseph W. Beard, M.D. (Vanderbilt, 1929), *Associate Professor of Virology and Professor of Surgery.*

John R. Overman, M.D. (Duke, 1950), *Associate Professor of Microbiology, Assistant Professor of Medicine.*

John E. Larsh, Jr., Sc.D. (Johns Hopkins, 1943), *Professor of Parasitology at Duke and UNC.*

Hilda Pope Willett, Ph.D. (Duke, 1949), *Associate Professor of Microbiology.*

Leo Pine, Ph.D. (California, 1952), *Assistant Professor of Microbiology, and USPHS. Senior Fellow.*

Mary A. Poston, A.M. (Duke, 1939), *Associate in Microbiology.*

Suydam Osterhout, M.D. (Duke, 1950), Ph.D. (Rock. Inst., 1959), *Associate in Microbiology and Medicine.*

Hilliard F. Hardin, Ph.D. (Duke, 1953), *Research Associate.*

H. W. Craig, *Technical Associate in Serology.*

Bacteriology, Immunology, and Mycology. The required course is given in the first term of the second year. An intensive study is made of the common bacteria, fungi, and viruses which cause disease in man. The scope of the laboratory course is reasonably wide and acquaints the student with all the methods and procedures employed in bacteriologic laboratories. Most of the lecture time is devoted to the immunologic and epidemiologic aspects of infection. The instruction is designed to give the students a clear conception of: (1) how organisms gain entrance to the body, (2) the type of poisons which they produce, (3) the nature of immune bodies which are produced by the host, and (4) the methods of preventing the disease by active and passive immunization.

Research Bacteriology. Opportunities for original investigations are afforded a few specially qualified students.

Clinical Bacteriology. During their clinical clerkships on medicine (one quarter each for junior and senior classes), the students may perform the routine and special bacteriologic work of the patients assigned to them on the teaching service, under the direction of the Department of Bacteriology and in parallel with the Biologic Division of the medical clinic.

Obstetrics and Gynecology

Francis Bayard Carter, M.D. (Johns Hopkins, 1925), *Professor of Obstetrics and Gynecology and Chairman of the Department.*

Edwin Crowell Hamblen, M.D. (Virginia, 1928), *Professor of Endocrinology and Associate Professor of Obstetrics and Gynecology.*

Walter Lee Thomas, M.D. (Virginia, 1931), *Professor of Obstetrics and Gynecology.*

Robert Nowell Creadick, M.D. (Yale, 1937), *Associate Professor of Obstetrics and Gynecology.*

Roy Turnage Parker, M.D. (Med. Coll., Va., 1944), *Associate Professor of Obstetrics and Gynecology.*

Violet Horner Turner, M.D. (Chicago, 1940), *Assistant Professor of Obstetrics and Gynecology.*

Charles Henry Peete, Jr., M.D. (Harvard, 1947), *Assistant Professor of Obstetrics and Gynecology.*

Walter Boris Cherny, M.D. (McGill, 1950), *Assistant Professor of Obstetrics and Gynecology.*

Eleanor Beamer Easley, M.D. (Duke, 1934), *Associate in Obstetrics and Gynecology.*

Christa Von Roebel, M.D. (Leipzig, 1937), *Associate in Obstetrics and Gynecology.*

Leonard Palumbo, M.D. (Duke, 1944), *Visiting Lecturer in Obstetrics and Gynecology.*

Robert Alexander Ross, M.D. (Pennsylvania, 1922), *Visiting Lecturer in Obstetrics and Gynecology.*

Trogler Francis Adkins, M.D. (Duke, 1936), *Instructor in Obstetrics and Gynecology.*

William Alexander Graham. M.D. (Pennsylvania, 1932), *Instructor in Obstetrics and Gynecology.*

Richard Lehmer Pearse, M.D. (Harvard, 1931), *Instructor in Obstetrics and Gynecology.*

Kenneth Arthur Podger, M.D. (Duke, 1941), *Instructor in Obstetrics and Gynecology.*

W. Kenneth Cuyler, Ph.D. (Duke, 1941), *Research Instructor in Obstetrics and Gynecology.*

Claudius Parks Jones, M.T. (Duke, 1935), *Research Instructor in Obstetrics and Gynecology.*

RESIDENTS

Harry Wallace Johnson, M.D. (Duke, 1955)

Charles Shirey Flynn, M.D. (Duke, 1945)

ASSISTANT RESIDENTS

Yancey G. Culton, Jr., M.D. (Duke, 1955)

Bryan Clinton West, Jr., M.D. (Duke, 1954)

Marion Carlyle Crenshaw, Jr., M.D. (Duke, 1956)

Roston Meldrim Williamson, M.D. (Med. Coll., Ga., 1951)

George Dewey Wilbanks, Jr., M.D. (Duke, 1956)

George Howard Satterfield, Jr., M.D. (Duke, 1957)

Robert Norwood Ellington, M.D. (Duke, 1956)

Liam Haim, M.D. (Duke, 1955)

FELLOWS

Francisco L. Garcia, M.D. (Javeriana, Bogota, 1950), *Fellow in Endocrinology.*

Shoichiro Hori, M.D. (Okayama, Japan, 1952), *Fellow in Endocrinology.*

Enrique Onetto, M.D. (Chile, 1952), *Fellow in Endocrinology.*

Guy Onghena, M.D. (Ghent, Belgium, 1954), *Fellow in Endocrinology.*

Alberto Padua, M.D. (Caracas, 1948), *Fellow in Endocrinology.*

Aram Sukanthanak, M.D. (Siriraj, 1950), *Fellow in Endocrinology.*

Second year students receive 22 hours of instruction in the fundamentals of Obstetrics, Gynecology and Endocrinology during their course in physical diagnosis in the sixth quarter.

During one quarter of the junior year each student group attends Ward Rounds at 8:30 A.M. on Mondays, Wednesdays, and Saturdays; Preoperative and Predelivery Conferences on Tuesdays, and Fridays; tutorials on Mondays, Tuesdays and Wednesdays; Pathology Conferences on Thursdays and Staff Meetings on Fridays with members of the staff and the staff of other departments. They also attend an Endocrine Clinic once a week; an abnormal Obstetric Clinic once a

week; and the regular Out Patient Clinic five times weekly for nine weeks.

The students during their nine weeks in the junior year are also assigned patients on the Obstetric and Gynecologic Wards.

Pathology

Wiley D. Forbus, M.D. (Johns Hopkins, 1923), *Professor of Pathology and Chairman of the Department.*

Roger D. Baker, M.D. (Harvard, 1928), *Professor of Pathology and Chief of the Laboratory Service, Durham VA Hospital.*

Bernard F. Fetter, M.D. (Duke, 1944), *Associate Professor of Pathology and Chief of the Division of Surgical Pathology.*

Chauncey G. Bly, M.D. (Rochester, 1946), Ph.D. (Rochester, 1953), *Associate Professor of Pathology.*

Albert G. Smith, M.D. (Washington Univ., 1947), *Associate Professor of Pathology and Associate Pathologist, Durham VA Hospital.*

Joachim R. Sommer, M.D. (Munich, 1950), *Assistant Professor of Pathology.*

Ernest W. Chick, M.D. (Duke, 1953), *Associate in Pathology and Clinical Investigator Durham VA Hospital.*

Shao-nan Huang, M.D. (Taiwan, 1954), *Instructor in Pathology.*

Roman Lee Patrick, Jr., M.D. (Duke, 1957), *National Cancer Institute Trainee in Pathology and Instructor in Pathology.*

Jane G. Elchlepp, Ph.D. (Iowa, 1948), M.D. (Chicago, 1955), *Surgeon, USPHS and Research Associate in Pathology.*

Carl M. Bishop, *Technical Associate in Pathology.*

J. Phillip Pickett, *Technical Instructor in Pathology.*

ASSISTANT RESIDENTS

Robert W. Sommer, M.D. (McGill, 1955), *Assistant Resident VA Hospital, Durham and Instructor in Pathology.*

Tung Pui Poon, M.D. (Ling-Nan, 1952), *Assistant Resident and Assistant in Pathology.*

Muriel K. Schauble, M.D. (Rochester, 1954), *Assistant Resident VA Hospital, Durham and Assistant in Pathology.*

Simon Calle, M.D. (Antioquia, 1957), *Assistant Resident and Assistant in Pathology.*

Wilford W. Spradlin, M.D. (Virginia, 1957), *Assistant Resident and Assistant in Pathology.*

Donald H. Grunert, M.D. (Duke, 1958), *Assistant Resident VA Hospital, Durham and Assistant in Pathology.*

Robert T. Chambers, M.D. (Duke, 1958), *Assistant Resident VA Hospital, Durham and Assistant in Pathology.*

INTERNS

Wilson Hendry, M.D. (Duke, 1959), *Intern and Assistant in Pathology.*

Shinpei Kasakura, M.D. (Kyoto, 1958), *Intern and Assistant in Pathology.*

William W. Johnston, M.D. (Duke, 1959), *Intern and Assistant in Pathology.*

FELLOWS

Ahmad Taghavy, M.D. (Freiburg, 1957), *Voluntary Assistant in Pathology.*

Yongyoot Sujjavanich, M.D. (Chulalongkorn, 1956), *ICA Fellow in Pathology.*

Percy Falcon, M.D. (San Marcos, 1953), *Fulbright Fellow in Pathology.*

General Pathology: The course in general pathology is given during the first and second terms of the second year. All the work of the class is done with small groups, each under the guidance of a senior instructor and his junior assistant. The histologic aspects of the pathologic processes are studied co-incidentally with the gross anatomic and physiologic alterations of the tissues, thus maintaining a unity of conception of disease. As the various pathologic processes and the diseases arising from their elaboration are studied by the student groups, assignments involving reports on the study of groups of cases are made by individual students. The group work and the individual student reports are supplemented by weekly conferences involving the class as a whole and dealing with problems presented by current autopsies and with other problems of general importance. Student collaboration in post-mortem studies is required. Cases thus studied are presented by the student before the class under the direction of the staff; this takes the form of a clinical-pathologic conference in which each student plays a particular role.

Elective Courses. Special courses in pathology are given to students who have completed the course in general pathology. These courses are available through special arrangement.

Clinical-Pathologic Conference (CPC): A weekly clinical-pathologic conference for advanced study is held on Saturdays. It is open to all persons interested, but is designed especially for the Hospital and Medical School Staff. Attendance by all the students is expected but is optional. Miscellaneous weekly pathologic conferences dealing with current cases under treatment on the various services are held for instruction of the staffs concerned.

Student Research. Research facilities are provided for competent students. Those who show an interest in investigative work are given every encouragement and are allowed to work independently or in collaboration with the staff.

Postgraduate Instruction: The staff of the Department is composed of senior non-resident and junior resident members. The resident staff consists of interns, assistant residents, and a resident; all of these are active teachers as well as advanced students of disease. Ample opportunity for the development of a career in the field of pathology is provided for these men.

Medicolegal Instruction: The department works in close co-operation with the North Carolina State Medical Examiner System. Special medico-legal investigation for others are undertaken from time to time. The department collaborates with other departments of the School of Medicine and Law in a course in legal medicine that is given in alternate years.

Pediatrics

Jerome Sylvan Harris, M.D. (Harvard, 1933), *Professor of Pediatrics, Chairman of the Department, and Associate Professor of Biochemistry.*

Wilburt Cornell Davison, M.D. (Johns Hopkins, 1917), *James B. Duke Professor of Pediatrics.*

Jay Morris Arena, M.D. (Duke, 1932), *Professor of Pediatrics.*

Susan Coons Dees, M.D. (Johns Hopkins, 1934), *Professor of Pediatrics.*

C. Nash Herndon, M.D. (Jegerson, 1939), *Visiting Lecturer in Medical Genetics.*

Angus McBryde, M.D. (Pennsylvania, 1927), *Professor of Pediatrics.*

William J. A. DeMaria, M.D. (Duke, 1948), *Associate Professor of Pediatrics.*

Doris Ahlee Howell, M.D. (McGill, 1949), *Associate Professor of Pediatrics.*

Leslie Hohman, M.D. (Johns Hopkins, 1917), *Assistant Professor of Pediatrics and Professor of Psychiatry.*

Arthur Hill London, M.D. (Pennsylvania, 1927), *Assistant Professor of Pediatrics (Duke)* and *Clinical Professor of Pediatrics (UNC).*

Hans Lowenbach, M.D. (Hamburg, 1929), *Assistant Professor of Pediatrics and Professor of Psychiatry.*

Talmage L. Peele, M.D. (Duke, 1934), *Assistant Professor of Pediatrics, Associate Professor of Anatomy, and Assistant Professor of Neurology.*

Robert S. Stempfel, M.D. (Vanderbilt, 1952), *Assistant Professor of Pediatrics.*

Atala Thayer Scudder Davison, M.D. (Johns Hopkins, 1920), *Associate in Pediatrics.*

Mildred M. Sherwood, R.N. (Mt. Sinai, 1923), *Associate in Pediatrics.*

John A. Fowler, M.D. (Bowman Gray, 1946), *Assistant Professor of Pediatrics and Psychiatry.*

E. Croft Long, M.B., B.S., Ph.D. (London, 1952 and 1957), *Associate in Pediatrics and Assistant Professor of Physiology.*

Madison Stockton Spach, M.D. (Duke, 1954), *Associate in Pediatrics.*

George A. Watson, Jr., M.D. (Duke, 1939), *Associate in Pediatrics.*

J. Street Brewer, M.D. (Jefferson, 1919), *Instructor in General Practice.*

Amos N. Johnson, M.D. (Pennsylvania, 1933), *Instructor in General Practice.*

Thomas T. Jones, M.D. (Johns Hopkins, 1932), *Instructor in General Practice.*

Charles P. Bugg, M.D. (Johns Hopkins, 1953), *Instructor in Pediatrics.*

Frederic T. Eastwood, M.D. (Temple, 1944), *Instructor in Pediatrics.*

William W. Farley, M.D. (Med. Coll., Va., 1943), *Instructor in Pediatrics.*

James David Jones, M.D. (Duke, 1954), *Instructor in Pediatrics and Assistant Resident in Psychiatry.*

John T. King, M.D. (Med. Coll., Va., 1945), *Instructor in Pediatrics.*

David A. Lockhart, M.D. (Duke, 1951), *Instructor in Pediatrics.*

Karla Walter Nelson, M.D. (Duke, 1958), *Instructor in Pediatrics and Assistant Professor of Psychiatry.*

A. Douglas Rice, M.D. (Duke, 1951), *Instructor in Pediatrics.*

Benjamin S. Skinner, M.D. (Washington, 1940), *Instructor in Pediatrics.*

Corbet H. Turner, M.D. (Cornell, 1954), *Instructor in Pediatrics and Assistant Resident in Psychiatry.*

Bailey D. Webb, M.D. (Duke, 1946), *Instructor in Pediatrics.*

E. Jane Herring Wooten, M.D. (Duke, 1943), *Instructor in Pediatrics.*

RESIDENTS

Shirley E. Kirkman, M.D. (Duke, 1957)

Charles B. Neal, III, M.D. (Duke, 1955)

James R. Boulware, M.D. (Harvard, 1957), *Assistant Senior Resident.*

ASSISTANT RESIDENTS

William L. Bourland, M.D. (Duke, 1955)
William F. Bryant, Jr., M.D. (Duke, 1958)
Rebecca H. Buckley, M.D. (UNC, 1958)
Jack C. Evans, M.D. (Duke, 1958)
Gerald M. Fendrick, M.D. (Rochester, 1958)
James McCallum, M.D. (Bowman Gray, 1954)

FELLOWS

Robert F. Castle, M.D. (Western Reserve, 1956), *Pediatric Cardiology.*
Wilma L. Castle, M.D. (Western Reserve, 1956), *Pediatric Hematology.*
Barbara W. Gibson, M.D. (Yale, 1955), *Pediatric Hematology.*
Sook Kyung Lee, M.D. (Seoul, 1952), *Pediatric Hematology.*
Joel L. Rosenberg, M.D. (Vermont, 1956), *Pediatric Allergy.*
Herbert S. Strauss, M.D. (Zurich, 1954), *Pediatric Hematology.*

INTERNS

Thomas H. Albertson, M.D. (Duke, 1959)
Sarah I. Armstrong, M.D. (Duke, 1959)
H. Powell Baker, Jr., M.D. (Duke, 1959)
George E. Cassady, M.D. (Duke, 1958)
T. Harold Crowder, M.D. (Duke, 1955)
Charles P. Darby, M.D. (South Carolina, 1958)
George A. Engstrom, M.D. (Duke, 1959)
Sarah V. Esselstyn, M.D. (Harvard, 1958)
Patricia L. Hensler, M.D. (Duke, 1959)
Marcus M. Moore, M.D. (Duke, 1958)
James O. Morphis, Jr., M.D. (Duke, 1957)
T. Franklin Stallings, M.D. (Harvard, 1954)
Clarence M. Virtue, M.D. (Rochester, 1956)
Roy Stanley Wood, M.D. (Duke, 1959)
D. Michael Young, M.D. (Duke, 1959)

First-year medical students receive twenty hours instruction in normal growth and development and in patterns of behavior. There is a nine weeks course in pediatrics during the junior or senior year, the time being equally divided between clinic and ward services. Students participate in the morning subspecialty clinics, the well baby clinics and afternoon general medical pediatric clinics, seeing both new and return patients. Each week a one hour conference is held at the end of the following specialty clinics: hematology, metabolism, neurology, cardio-renal, allergy, convulsive disorders, behavior problems, endocrinology and well baby care. Each afternoon, there is a one hour conference in the general pediatric clinic with informal presentation and discussion of patients. On the wards, the students assist as clinical clerks and are assigned patients in rotation. They make daily rounds with the staff. Pediatric nursing procedures are demonstrated by the nursing supervisor. The different subspecialty groups—cardiology, hematology, allergy, endocrinology, dermatology,

metabolism—make ward rounds weekly. A joint conference with the senior and resident staff is held twice weekly on topics of pediatric interest, clinicopathologic discussions, case presentations and for guest lecturers. There is a weekly radiology conference at which all interesting cases of the week are presented and discussed with the radiologist. Each student prepares a paper on a pediatric subject of his own choosing which they present to the entire group in an informal discussion. Senior students may spend two weeks in general practice with Instructors in General Practice.

In addition to the ten pediatric first year residencies, there are four in which six months each are spent in obstetrics and pediatrics for graduates who plan to enter general practice. Six second-year residencies and three third-year residencies are available.

Physiology and Pharmacology

Frank Gregory Hall, Ph.D. (Wisconsin, 1923), *Professor of Physiology and Chairman of the Department.*

George S. Eadie, M.B. (Toronto, 1921), Ph.D. (Cambridge, 1927), *Professor of Physiology and Pharmacology.*

Frederick Bernheim, Ph.D. (Cambridge, 1928), *Professor of Pharmacology.*

William E. DeTurk, Ph.D. (Duke, 1940), M.D. (Vanderbilt, 1948), *Associate Professor of Pharmacology.*

Macdonald Dick, M.D. (Johns Hopkins, 1928), *Assistant Professor of Physiology and Pharmacology, and Associate in Medicine.*

Frank L. Engel, M.D. (Johns Hopkins, 1938), *Associate Professor of Physiology and Professor of Medicine.*

Wayland E. Hull, Ph.D. (Duke, 1950), *Associate Professor of Physiology and Markle Scholar.*

E. Croft Long, M.B., B.S., Ph.D. (London, 1952 and 1957), *Assistant Professor of Physiology and Associate in Pediatrics.*

John V. Salzano, Ph.D. (Iowa, 1956), *Assistant Professor of Physiology.*

Athos B. Ottolenghi, M.D. (Parvia, Italy, 1946), *Assistant Professor of Pharmacology.*

Jack L. Kostyo, Ph.D. (Cornell, 1957), *Assistant Professor of Physiology.*

John J. Gergen, M.D. (Harvard, 1957), *Instructor in Physiology.*

Howard B. Langley, *Technical Associate in Physiology.*

The course in medical physiology is given during the first year. There are lectures, laboratories and conferences each week in which are presented the general principles of human physiology and their general application to the practice of medicine. The physiology, anatomy and biochemistry courses are closely integrated.

The course in pharmacology is taught in the Spring of the second year. Lectures, laboratories and conferences deal with the mode of action of drugs in terms of biochemical and physiological processes.

Physiologic and Pharmacologic Research. The facilities of the department include modern types of research equipment. There are special facilities for research in the fields of respiration, high altitude physiology, circulation and cellular metabolism. Properly qualified

students are encouraged to undertake original research in physiology and pharmacology under direction of various members of the staff.

Seminars. Each fall term a seminar for graduate students in physiology is conducted by the staff.

Preventive Medicine and Public Health

William J. A. DeMaria, M.D. (Duke, 1948), *Associate Professor of Pediatrics.*

Jay Morris Arena, M.D. (Duke, 1932), *Professor of Pediatrics.*

Charles M. Cameron, Jr., M.D. (Vanderbilt, 1948), *Visiting Lecturer in Preventive Medicine and Public Health.*

Mac Roy Gasque, M.D. (Virginia, 1944), *Visiting Lecturer in Preventive Medicine and Public Health.*

Preventive Medicine and Public Health. In the first year there are four lectures given to provide some basic orientation predicated upon the fact that disease has a community as well as a personal aspect and that the social component of illness is an important force in the work of the doctor as well as in the life of the community. The student is introduced to disease as a mass or community problem and to medicine as a social institution.

In the second year there is a series of lectures, clinics, and conferences. These emphasize again the role of the physician as a member of his community. The methods and goals of preventive medicine are illustrated and discussed in a series of conferences dealing with specific diseases. The student is oriented in the methods of public health administration with particular emphasis on the role played by the practicing physician. The problems involved in the collection of vital statistics and the methods of epidemiology are considered. Special attention is given to the factors involved in providing medical care to the community. The physician's role in legal and industrial medicine are also considered. The course is designed primarily to give the student a point of view which he may incorporate in his future activities in clinical medicine.

During the clinical years a series of correlative clinics are conducted with the cooperation of the various clinical departments.

Psychiatry

Ewald W. Busse, M.D. (Washington Univ., 1942), *Professor of Psychiatry and Chairman of the Department.*

Louis D. Cohen, Ph.D. (Duke, 1949), *Professor of Medical Psychology and Chief of Clinical Psychology.*

Bingham Dai, Ph.D. (Chicago, 1935), *Professor of Mental Hygiene.*

Leslie Hohman, M.D. (Johns Hopkins, 1917), *Professor of Psychiatry and Assistant Professor of Pediatrics.*

Hans Lowenbach, M.D. (Hamburg, 1929), *Professor of Psychiatry and Assistant Professor of Pediatrics.*

John C. McKenney, Ph.D. (Michigan State, 1953), *Professor of Medical Sociology.*

Kurt W. Back, Ph.D. (Massachusetts Institute of Tech., 1949), *Associate Professor of Medical Sociology.*

Bernard Bressler, M.D. (Washington Univ., 1942), *Associate Professor of Psychiatry.*

R. Charman Carroll, M.D. (Colorado, 1939), *Associate Professor of Psychiatry, Highland Hospital, Asheville, N. C.*

John A. Fowler, M.D. (Bowman Gray, 1946), *Associate Professor of Psychiatry and Assistant Professor of Pediatrics.*

Walter D. Obrist, Ph.D. (Northwestern, 1950), *Associate Professor of Medical Psychology.*

Jack J. Preiss, Ph.D. (Michigan State, 1954), *Associate Professor of Medical Sociology.*

John M. Rhoads, M.D. (Temple, 1943), *Associate Professor of Psychiatry.*

Albert J. Silverman, M.D. (McGill, 1949), *Associate Professor of Psychiatry.*

John C. Altrocchi, Ph.D. (California, 1957), *Assistant Professor of Medical Psychology.*

Seymour J. Axelrod, Ph.D. (New York, 1958), *Assistant Professor of Medical Psychology.*

Lloyd J. Borstelmann, Ph.D. (California, 1950), *Assistant Professor of Medical Psychology.*

Sanford I. Cohen, M.D. (Chicago Med. Coll., 1952), *Assistant Professor of Psychiatry and Markle Scholar.*

Paul G. Daston, Ph.D. (Michigan State, 1952), *Assistant Professor of Medical Psychology.*

Robert H. Dovenmuehle, M.D. (St. Louis, 1948), *Assistant Professor of Psychiatry.*

Carl Eisdorfer, Ph.D. (New York, 1959), *Assistant Professor of Medical Psychology.*

Frederick R. Hine, M.D. (Yale, 1949), *Assistant Professor of Psychiatry.*

Martin Lakin, Ph.D. (Chicago, 1955), *Assistant Professor of Medical Psychology.*

Charles E. Llewellyn, M.D. (Med. Coll., Va., 1946), *Assistant Professor of Psychiatry.*

Joan M. Meiller, M.D. (N. Y., Coll. Med., Brooklyn, 1952), *Assistant Professor of Psychiatry.*

Richard M. Meiller, M.D. (N. Y., Coll. Med., Brooklyn, 1952), *Assistant Professor of Psychiatry.*

Karla Walter Nelson, M.D. (Heidelberg, 1941), *Assistant Professor of Psychiatry and Instructor in Pediatrics.*

Claude R. Nichols, M.D. (Baylor, 1946), *Assistant Professor of Psychiatry.*

David M. Shaw, Ph.D. (Minnesota, 1958), *Assistant Professor of Medical Sociology.*

Barry M. Shmavonian, Ph.D. (Washington Univ., 1957), *Assistant Professor of Medical Psychology.*

George A. Silver, M.D. (Duke, 1938), *Assistant Professor of Psychiatry.*

Herman Turk, Ph.D. (American, 1959), *Assistant Professor of Medical Sociology.*

Donald K. Adams, Ph.D. (Yale, 1927), *Consultant, Professor of Psychology.*

Norman Garmezy, Ph.D. (Iowa, 1950), *Consultant, Associate Professor of Psychology.*

Ila H. Gehman, Ph.D. (Pa. State, 1947), *Consultant, Lecturer in Psychology.*

Weston LaBarre, Ph.D. (Yale, 1937), *Consultant, Professor of Anthropology.*

Eliot H. Rodnick, Ph.D. (Yale, 1936), *Consultant, Professor of Psychology.*

Marie Baldwin, M.D. (South Carolina, 1929), *Associate in Psychiatry, Highland Hospital, Asheville, N. C.*

Robert L. Craig, M.D. (Johns Hopkins, 1935), *Associate in Psychiatry, Highland Hospital, Asheville, N. C.*

Mary M. Huse, Ph.D. (Duke, 1959), *Associate in Medical Psychology.*

Mildred D. Long, M.S.W. (Pittsburgh, 1940), *Associate in Psychiatric Social Work.*

John D. Patton, M.D. (St. Louis, 1945), *Associate in Psychiatry, Highland Hospital, Asheville, N. C.*

Frances C. Jeffers, M.A. (Columbia, 1945), *Research Associate in Psychiatry.*

Paul L. Adams, M.D. (Columbia, 1953), *Instructor in Psychiatry and Fellow in Child Psychiatry.*

Thad J. Barringer, M.D. (Vanderbilt, 1953), *Instructor in Psychiatry.*

Robert G. Brown, Ph.D. (UNC, 1960), *Instructor in Medical Sociology.*

Robert L. Green, M.D. (Hahnemann, 1946), *Instructor in Psychiatry.*

Edward J. Jordan, Jr., Ph.D. (Clark, 1958), *Instructor in Medical Psychology.*

Nancy F. McDonald, M.S.W. (UNC, 1957), *Instructor in Psychiatric Social Work.*

Philip G. Nelson, M.D. (Louvain, 1954), *Instructor in Psychiatry.*

E. Gustave Newman, M.D. (Duke, 1954), *Instructor in Psychiatry and Fellow in Research Psychiatry.*

Russell F. Tomlinson, Ph.D. (Florida, 1957), *Instructor in Medical Psychology.*

Hsioh-shan Wang, M.D. (Taiwan, 1953), *Instructor in Psychiatry and Fellow in Psychiatry.*

Margaret V. Burns, M.D. (Duke, 1938), *Assistant in Psychiatry, Highland Hospital, Asheville, N. C.*

Dorothy K. Heyman, M.S.W. (Pa. School of Social Work, 1940), *Research Assistant in Psychiatric Social Work.*

Betty J. Brown, M.A. (UNC, 1956), *Assistant in Psychiatric Social Work.*

Lily Pan, M.S.W. (UNC, 1959), *Psychiatric Social Worker, Highland Hospital, Asheville, N. C.*

Anne W. Tillinghast, M.S.W. (UNC, 1944), *Psychiatric Social Worker, Highland Hospital, Asheville, N. C.*

David L. Arenberg, M.A. (Johns Hopkins, 1951), *Research Assistant in Medical Psychology.*

Robert E. Canestrari, M.A. (William and Mary, 1956), *Research Assistant in Medical Psychology.*

FELLOWS

Anne Sagberg, M.D. (Oslo, 1947), *Fellow in Psychiatry, Highland Hospital, Asheville, N. C.*

RESIDENTS

Donald C. Carter, M.D. (Nebraska, 1950), *Assistant in Psychiatry.*

Dorothy S. Dobbs, M.D. (George Washington, 1956), *Resident in Psychiatry.*

Theodore J. Marshall, M.D. (Jefferson, 1956), *Resident in Psychiatry.*

Marvin J. Silverman, M.D. (Ottawa, 1956), *Resident in Psychiatry.*

Robert Edward Smith, M.D. (N. Y., Med. Coll., 1954), *Resident in Psychiatry.*

Adriaan Verwoerdt, M.D. (Amsterdam, 1952), *Assistant in Psychiatry.*

ASSISTANT RESIDENTS

David S. Barnes, M.D. (Western Ontario, 1957), *Assistant Resident in Psychiatry.*

Albert M. Bromberg, M.D. (Duke, 1957), *Assistant Resident in Psychiatry.*

Roy S. Clemmons, M.D. (Duke, 1959), *Assistant Resident in Psychiatry.*

Howard L. Cox, M.D. (Duke, 1952), *Assistant Resident in Psychiatry.*

Virgil M. Cox, Jr., M.D. (Texas, 1956), *Assistant Resident in Psychiatry.*

David W. Croft, M.D. (Jefferson, Med. Coll., 1954), *Assistant Resident in Psychiatry.*

Ben W. Feather, M.D. (George Washington, 1956), *Assistant Resident in Psychiatry.*

Jerry Jerome Fleischaker, M.D. (Louisville, 1955), *Assistant Resident in Psychiatry.*

Gerard G. Gingras, M.D. (Ottawa, 1957), *Assistant Resident in Psychiatry.*

Theodore J. Goldbloom, M.D. (British Columbia, 1957), *Assistant Resident in Psychiatry.*

Lindsay A. Graham, M.D. (McGill, 1955), *Assistant Resident in Psychiatry.*

John L. Hughes, M.D. (Med. Coll., Ga., 1959), *Assistant Resident in Psychiatry.*

Pedro J. Irigaray, M.D. (Mexico, 1955), *Assistant Resident in Psychiatry.*

James David Jones, M.D. (Duke, 1954), *Assistant Resident in Psychiatry and Instructor in Pediatrics.*
John L. Lertora, M.D. (Georgetown, 1956), *Assistant Resident in Psychiatry.*
Milton B. Mann, M.D. (UNC, 1956), *Assistant Resident in Psychiatry.*
Thomas E. McArthur, M.D. (Georgia, 1946), *Assistant Resident in Psychiatry.*
John B. Reckless, M.D. (Birmingham, 1954), *Assistant Resident in Psychiatry.*
Theo E. Tetreault, M.D. (Yale, 1943), *Assistant Resident in Psychiatry.*
D. Fredric Thompson, M.D. (Kansas, 1957), *Assistant Resident in Psychiatry.*
David Trachtenberg, M.D. (N. Y., Bellevue, 1959), *Assistant Resident in Psychiatry.*
Corbet H. Turner, M.D. (Cornell, Med. Coll., 1954), *Assistant Resident in Psychiatry and Instructor in Pediatrics.*
Alfred H. Yongue, M.D. (Duke, 1959), *Assistant Resident in Psychiatry.*

PSYCHOLOGY INTERNS IN THE DEPARTMENT OF PSYCHIATRY

Frances Y. Durham, B.A. (Duke, 1955)
Stuart E. Golann, B.A. (Queens, 1957)
Owen L. McConnell, B.S. (Duke, 1957)
Edward M. Opton, Jr., B.A. (Yale, 1957)
David A. Parton, B.A. (Willamette, 1953)
Larry W. Thompson, M.A. (Florida State, 1958)
Stuart J. Wilson, M.A. (Detroit, 1957)

The objectives of the undergraduate teaching program in the Department of Psychiatry are to: (A) Bring to the medical student the basic information which he requires to comprehend his role in the community as a physician, to understand his relationship with patients, to appreciate the impact of disease upon the patient, and to understand the influence of the psychic processes upon the behavior and physiological functioning of the patient; (B) Provide the student with the knowledge of interviewing techniques and psychotherapeutic skills which can be utilized in the general practice of medicine.

Instruction begins in the first year. Approximately 76 hours are devoted to personality development, maturing and aging, and the effect of the environment upon the individual. Teaching methods include lectures, the clinical demonstration of normal children, adults and patients, and small group discussions. During the second year, psychiatric concepts are presented which consider in some detail the topography of the mind, the common mental mechanisms, the concept of the unconscious, and the effects of these various factors on disease. Interviewing techniques are given considerable attention, and the student is given his first opportunity to observe and work with patients. In the third year, the student is assigned for a nine-week period to the In-Patient Service and to the Psychosomatic Service of the Department of Psychiatry. During this time, he has an opportunity to come in contact with patients who have a wide variety of emotional disorders. Emphasis is placed upon recognition and treatment of mental disturbances and the proper referral of seriously disturbed patients. During the senior year, the student, under close supervision, conducts psychotherapeutic interviews and observes the

psychotherapeutic efforts of a senior psychiatrist. One afternoon a week is allotted throughout the year for this purpose.

Specialty training in the field of Psychiatry is offered to professionally qualified physicians who have completed at least one year of internship. Completion of such training meets the requirements of the American Board of Psychiatry and Neurology. The major areas of residency training are the Psychiatric In-Patient Service, the Adult Out-Patient Clinic, Psychosomatic Medicine, and the Durham Child Guidance Clinic.

Radiology

Robert J. Reeves, M.D. (Baylor, 1924), *Professor of Radiology and Chairman of the Department.*

George Jay Baylin, M.D. (Duke, 1937), *Professor of Radiology.*

William Francis Barry, Jr., M.D. (Pennsylvania, 1946), *Associate Professor of Radiology.*

Boyd Thomas Worde, M.D. (Tennessee, 1947), *Assistant Professor of Radiology.*

John Ashley Goree, M.D. (Duke, 1955), *Associate in Radiology.*

Aaron P. Sanders, M.S. (Rochester, 1952), *Assistant Professor of Radiology and Director of Isotope Laboratory.*

Patrick J. Cavanaugh, M.D. (St. Louis, 1951), *Assistant Professor of Radiology.*

Owen W. Doyle, M.D. (Yale, 1947), *Associate Professor of Radiology.*

S. Paul Perry, M.D. (Chicago, 1926), *Associate Professor of Radiology and Chief of Radiology, Watts Hospital.*

George H. Brown, M.D. (Yale, 1936), *Chief of Service, Durham VA Hospital.*

Kile Clinton Hardesty, M.D. (Michigan, 1931), *Assistant Chief, Durham VA Hospital.*

Cyrus L. Gray, M.D. (Duke, 1937), *Associate in Radiology, Chief of Radiology, Memorial Hospital, High Point.*

Allen Taylor, M.D. (Duke, 1947), *Associate in Radiology, Chief of Radiology, Pitt County Memorial, Greenville, N. C.*

Simmons Isler Patrick, M.D. (Duke, 1951), *Associate in Radiology, Chief of Radiology, Lenoir Memorial Hospital, Kinston, N. C.*

Murray T. Jackson, M.D. (Duke, 1951), *Associate in Radiology.*

John Edmund Wear, M.D. (Alabama, 1945), *Associate in Radiology.*

Thomas G. Thurston, M.D. (Harvard, 1941), *Associate in Radiology.*

John F. Sherrill, Jr., M.D. (Bowman Gray, 1946), *Associate in Radiology.*

Guy W. Schlaseman, M.D. (Duke, 1946), *Associate in Radiology.*

John B. Cahoon, R.T., *Instructor in Radiology.*

RESIDENTS

James W. Proffitt, M.D. (Med. Coll., Va., 1956)

Elliott Cogswell Shull, Jr., M.D. (Hahnemann, 1956)

James S. Redmond, Jr., M.D. (Duke, 1956)

Dewey L. Barton, M.D. (Duke, 1956)

Brooks VanSlyke Klostermyer, M.D. (Hahnemann, 1954)

John Turpin Myles, M.D. (Med. Coll., Va., 1955)

James F. Reinhardt, M.D. (Duke, 1942)

Karl K. Wallace, Jr., M.D. (Med. Coll., Va., 1958)

Norman Alan Thorne, M.D. (Duke, 1958)

Joseph McCraw James, M.D. (Duke, 1955)

Michael Paul Capp, M.D. (UNC, 1958)

Richard Louis Bean, M.D. (Duke, 1959)
David W. Brooks, Jr., M.D. (Duke, 1959)

Radiology teaching starts in the first year. X-rays are made on anatomy cadavers and these are studied by students during dissection. Radiologic discussions are presented to section groups. In the second year students, groups get further sectional training. An attempt is made to acquaint the student with the aids of roentgenology in diagnostic problems. The correct use of x-rays in diagnosis is stressed.

Between April and May, 1960 the Radiation Therapy Wing will be completed and opened. This is a 16 room addition to the Department of Radiology and will house the entire radiation therapy, cancer teaching and cancer research portion of the department. Two supervoltage rooms are being equipped, one with 3000 curie Cobalt 60 machine. The other room being equipped with Cesium 137 unit for head and neck, mouth and lip cancer. There will be one 280 kilovolt conventional x-ray therapy machine. The radium unit is complete with housing facilities and working area for 1000 milligrams of radium or Co_{60} equivalent. In addition to examining rooms and viewing rooms there will be one large lecture hall in which tumor clinics and student conferences will be held.

Therapeutic radiology is given each quarter in the senior year. Tumor clinics run throughout the year. At these sessions the general problem of the treatment of benign, inflammatory and malignant lesions by x-ray and radium is discussed, and accepted views of the combination of these therapeutic agents with surgery are emphasized. Representative cases are demonstrated, and the follow-up results are particularly stressed. The tumor clinic is active in all specialties.

A limited number of senior students are permitted to attend routine film reading sessions in the Department of Radiology. They are also instructed in the fundamentals of fluoroscopic examinations and shown the many pitfalls of the inexperienced fluoroscopist.

X-ray conferences are scheduled with each specialty in the X-ray Conference room with weekly schedules. All x-ray cases on the service of the preceding week are shown and briefly discussed for benefit of the house staff and attending students. Weekly conferences, including the Ear, Nose and Throat, Orthopaedics, Neurosurgery, Thoracic surgery, Pediatrics, Cardiac, Gastro-intestinal, Urology, are held and used as part of the teaching program. Wednesday and Friday afternoons special x-ray conferences of x-ray pathology are held. X-ray pathology conference 5 to 6 P.M. each Wednesday afternoon in the autopsy room.

Each Wednesday evening a conference is held by the members of the x-ray staff and visiting radiologists. Difficult cases are brought up for discussion and diagnosis.

A regional x-ray conference is held the last Thursday in each month, alternating with the University of North Carolina.

A complete radioisotope laboratory facility is available for the diagnostic and therapeutic applications of radioisotopes. Radio-iodine is used routinely in the evaluation of thyroid function and in the treatment of hyperthyroidism and thyroid carcinoma. Other isotopes also are used clinically.

An investigative program using radioisotope labeled materials concerned with normal and abnormal physiology of the gastro-intestinal tract. As a result, routine clinical tests using radioisotope labeled compounds are now in use in the evaluation of gastro-intestinal function. Other research programs in progress are concerned with cardiovascular, pulmonary and renal function, both in normal and abnormal patients.

A training program in the physics, radiation protection, routine handling, and application of radioisotopes in medicine is a part of the Radiology Resident's Program.

Surgery

Deryl Hart, M.D. (Johns Hopkins, 1921), *Professor of Surgery and Chairman of the Department.*

Edwin P. Alyea, M.D. (Johns Hopkins, 1923), *Professor of Urology.*

W. Banks Anderson, M.D. (Johns Hopkins, 1924), *Professor of Ophthalmology.*

Ralph A. Arnold, M.D. (Buffalo, 1936), *Professor of Otology and Associate Professor of Otolaryngology.*

Lenox D. Baker, M.D. (Duke, 1933), *Professor of Orthopaedic Surgery.*

Joseph W. Beard, M.D. (Vanderbilt, 1929), *Professor of Surgery in Charge of Experimental Surgery and Associate Professor of Virology.*

John E. Dees, M.D. (Virginia, 1933), *Professor of Urology.*

Watt W. Eagle, M.D. (Johns Hopkins, 1925), *Professor of Otolaryngology.*

Clarence E. Gardner, Jr., M.D. (Johns Hopkins, 1928), *Professor of Surgery.*

J. Leonard Goldner, M.D. (Nebraska, 1943), *Professor of Orthopaedic Surgery.*

Keith S. Grimson, M.D. (Rush Med. Coll., 1933), *Professor of Surgery.*

Guy L. Odom, M.D. (Tulane, 1933), *Professor of Neurosurgery.*

Kenneth L. Pickrell, M.D. (Johns Hopkins, 1935), *Professor of Plastic and Maxillofacial and Oral Surgery.*

Raymond W. Postlethwait, M.D. (Duke, 1937), *Professor of Surgery and Chief of Surgical Service, Durham VA Hospital.*

Will C. Sealy, M.D. (Emory, 1936), *Professor of Thoracic Surgery.*

William W. Shingleton, M.D. (Bowman Gray, 1943), *Professor of Surgery.*

C. Ronald Stephen, M.D. (McGill, 1940), *Professor of Anesthesiology and Chief of Division of Anesthesiology.*

Barnes Woodhall, M.D. (Johns Hopkins, 1930), *Professor of Neurosurgery.*

William G. Anlyan, M.D. (Yale, 1949), *Associate Professor of Surgery.*

Ivan W. Brown, Jr., M.D. (Duke, 1940), *Associate Professor of Surgery.*

Marcus L. Dillon, M.D. (Duke, 1948), *Associate Professor of Surgery; Assistant Chief of Surgical Service, Durham VA Hospital.*

Nicholas G. Georgiade, M.D. (Duke, 1949), *Associate Professor of Plastic, Maxillofacial and Oral Surgery.*

Victor A. Politano, M.D. (Duke, 1943), *Associate Professor of Urology.*

Norman F. Ross, D.D.S. (Temple, 1937), *Associate Professor of Dentistry and Head of Division of Dentistry.*

James H. Semans, M.D. (Johns Hopkins, 1936), *Associate Professor of Urology.*

Frederick W. Stocker, M.D. (Bern, Switzerland, 1918), *Associate Professor of Ophthalmology.*

Galen W. Quinn, D.D.S. (Creighton, 1952), M.S. (Tennessee, 1955), *Associate Professor of Orthodontics.*

W. Glenn Young, Jr., M.D. (Duke, 1948), *Associate Professor of Surgery.*

George S. Beaudreau, Ph.D. (Oregon State, 1954), *Assistant Professor of Virology.*

Robert A. Bonar, Ph.D. (California, 1953), *Assistant Professor of Biophysics.*

Kenneth D. Hall, M.D. (Duke, 1956), *Assistant Professor of Anesthesiology.*

Norman Kirshner, Ph.D. (Pennsylvania State, 1952), *Assistant Professor of Experimental Surgery and Associate in Biochemistry.*

Sara J. Dent, M.D. (South Carolina, 1945), *Assistant Professor of Anesthesiology.*

George B. Ferguson, M.D. (Jefferson, 1932), *Assistant Professor of Endoscopy and Laryngology.*

Blaine S. Nashold, M.D. (McGill, 1954), *Assistant Professor of Neurosurgery.*

William C. North, M.D. (Northwestern, 1950), *Assistant Professor of Anesthesiology.*

Roderick B. Ormandy, Ph.D. (Northwestern, 1953), *Assistant Professor of Medical Speech Pathology.*

William P. J. Peete, M.D. (Harvard, 1947), *Assistant Professor of Surgery and Assistant to the Dean.*

Wirt W. Smith, M.D. (Texas, 1951), *Assistant Professor of Experimental Surgery.*

Dorothy W. Beard, R.N. (Vanderbilt, 1929), *Associate in Surgery and Research Associate in Experimental Surgery.*

Everett I. Bugg, Jr., M.D. (Johns Hopkins, 1937), *Associate in Orthopaedics.*

Nathan R. Callaghan, D.D.S. (Northwestern, 1942), *Associate in Dentistry.*

Jesse L. Cavener, M.D. (Oklahoma, 1939), *Associate in Anesthesiology.*

Frank W. Clippinger, M.D. (Washington Univ., 1952), *Associate in Orthopaedics.*

Raphael W. Coonrad, M.D. (Duke, 1947), *Associate in Orthopaedics.*

John Glasson, M.D. (Cornell, 1943), *Associate in Orthopaedics.*

William F. Hollister, M.D. (Duke, 1938), *Associate in Surgery; Chief of General and Thoracic Surgery, Moore County Hospital, Pinehurst, N. C.*

Paul R. Knox, M.D. (George Washington, 1954), *Associate in Anesthesiology.*

John C. Kouns, D.D.S. (Emory, 1937), *Associate in Dentistry, Chief of Dental Service, Durham VA Hospital.*

Alan Maurice Lesage, M.D. (Paris, 1949), *Associate in Experimental Surgery.*

E. A. Cecil Lloyd, M.D. (London, England, 1951), *Associate in Anesthesiology.*

Samuel D. McPherson, M.D. (Johns Hopkins, 1943), *Associate in Ophthalmology.*

H. Max Schiebel, M.D. (Johns Hopkins, 1933), *Associate in Surgery.*

Mary Caroline Becker, M.D. (Johns Hopkins, 1950), *Research Associate in Experimental Surgery.*

Ronald W. Chen, Ph.D. (California, 1957), *Research Associate in Surgery, Durham VA Hospital.*

William Grandy Curtis, M.A. (Duke, 1957), *Research Associate in Surgery.*

Ursula I. Heine, Ph.D. (Berlin, 1953), *Research Associate in Experimental Surgery.*

Alfred M. Wallbank, Ph.D. (Michigan State, 1956), *Research Associate in Experimental Surgery.*

David Weinstein, Ph.D. (Purdue, 1959), *Research Associate in Experimental Surgery.*

Marguerite Alberta Thiele, A.B. (Duke, 1944), *Research Associate in Thoracic Surgery.*

Leslie C. Meyer, M.D. (Nebraska, 1943), *Lecturer in Orthopaedics; Orthopaedic Surgeon, Shriners' Hospital for Crippled Children, Greenville, S. C.*

George R. Miller, M.D. (Rochester, 1943), *Lecturer in Orthopaedics; Associate Surgeon, N. C. Orthopaedic Hospital, Gastonia, N. C.*

Oscar L. Miller, M.D. (Emory, 1912), *Lecturer in Orthopaedics; Orthopaedic Surgeon, Charlotte (N. C.), Memorial Hospital.*

William McK. Roberts, M.D. (Tufts, 1925), *Lecturer in Orthopaedics; Surgeon-in-Chief, N. C. Orthopaedic Hospital, Gastonia, N. C.*

Frank H. Stelling, M.D. (Med. Coll., Ga., 1938), *Lecturer in Orthopaedics; Chief Surgeon, Shriners' Hospital for Crippled Children, Greenville, S. C.*

Delos W. Boyer, M.D. (George Washington, 1950), *Instructor in Orthopaedics.*

Mary B. Campbell, R.N. (St. Luke's 1937), *Instructor in Anesthesiology and Chief Nurse Anesthetist.*

Gordon M. Carver, Jr., M.D. (Duke, 1947), *Instructor in Surgery.*

Thomas B. Dameron, M.D. (Duke, 1947), *Instructor in Orthopaedics; Raleigh, N. C.*

Lee W. Elgin, Jr., M.D. (Maryland, 1952), *Instructor in Ophthalmology.*

Robert E. Musgrave, M.D. (Tennessee, 1946), *Instructor in Orthopaedics, Danville, Va.*

Carl N. Patterson, M.D. (Maryland, 1944), *Instructor in Otolaryngology.*

Eva O. Reese, R.N., *Instructor in Perimetry.*

Baxter B. Sapp, D.D.S. (Temple, 1951), *Instructor in Dentistry.*

Larry Turner, M.D. (Duke, 1939), *Instructor in Ophthalmology.*

Thomas C. Kerns, Jr., M.D. (Duke, 1950), *Assistant in Ophthalmology.*

FELLOWS

James Warren Bickerstaff, Jr., M.D. (Emory, 1954), *U.S. Navy Fellow in Orthopaedics, Shriners' Hospital for Crippled Children, Greenville, S. C.*

John H. Dilworth, M.D. (Virginia, 1958), *U. S. Air Force Fellow in Orthopaedics.*

John W. Freese, M.D. (Johns Hopkins, 1957), *Fellow in Surgery.*

Jerry M. Ingalls, M.D., (Johns Hopkins, 1958), *Fellow in Surgery.*

William B. Jones, M.D. (Duke, 1954), *U. S. Air Force Fellow in Orthopaedics.*

John W. Reeves, M.D. (Duke, 1955), *Fellow in Surgery.*

Donald Silver, M.D. (Duke, 1955), *Fellow in Surgery.*

Robert Walker Taylor, M.D. (Wyoming, 1954), *U. S. Air Force Fellow in Orthopaedics.*

George L. Wilson, M.D. (Colorado, 1953), *U. S. Navy Fellow in Orthopaedics, N. C. Orthopaedic Hospital, Gastonia, N. C.*

Allen R. Wright, M.D. (Creighton, 1954), *U.S. Air Force Fellow in Orthopaedics, N. C. Orthopaedic Hospital, Gastonia, N. C.*

RESIDENTS

Jerome E. Adamson, M.D. (Duke, 1954), *Resident and Instructor in Plastic Surgery.*

Henry A. Callaway, Jr., M.D. (Vanderbilt, 1954), *Resident and Instructor in Surgery.*

William H. M. Finney, M.D. (Johns Hopkins, 1952), *Resident and Instructor in Neurosurgery.*

Benjamin J. Floyd, M.D. (Texas, 1953), *Resident and Instructor in Urology.*

Richard D. Floyd, M.D. (Yale, 1952), *Resident and Instructor in Surgery.*

John S. Forrest, M.D. (N. Y. Med. Coll., Syracuse, 1953), *U. S. Air Force Resident in Orthopaedics, Shriners' Hospital for Crippled Children, Greenville, S. C.*

Joe W. Frazer, M.D. (Duke, 1952), *Resident and Instructor in Surgery.*

Jay R. Johnson, M.D. (St. Louis, 1953), *Resident and Instructor in Urology.*

S. N. Kapoor, M.D. (King George's Med. Coll., 1953), *Resident in Orthopaedics, Watts and Lincoln Hospitals.*

James M. Kelley, M.D. (Duke, 1954), *Resident in Orthopaedics.*

Martin J. Kreshon, M.D. (Marquette, 1954), *Resident and Instructor in Ophthalmology.*

Robert D. MacMillan, M.D. (Ohio State, 1957), *Resident and Instructor in Anesthesiology.*

Donald E. McCollum, M.D. (Bowman Gray, 1953), *Resident in Orthopaedics, Durham VA Hospital.*

Jesse Thomas Mitchell, D.D.S. (Tennessee, 1952), *Resident in Oral Surgery.*

Sender Stolove, M.D. (Tulane, 1956), *Resident and Instructor in Otolaryngology.*

Vartan N. Vartanian, M.D. (Cluj, Roumania, 1951), *Resident and Instructor in Anesthesiology.*

ASSISTANT RESIDENTS

William Lester Adcock, Jr., M.D. (Bowman Gray, 1956), *Assistant Resident in Neurosurgery.*

C. G. Adkins, M.D. (Maryland, 1952), *Assistant Resident in Anesthesiology.*

Howard P. Aidem, M.D. (Illinois, 1956), *Assistant Resident in Orthopaedics, Durham VA Hospital.*

W. Banks Anderson, Jr., M.D. (Harvard, 1956), *Assistant Resident in Ophthalmology.*

Edward Everett Anderson, M.D. (Duke, 1957), *Assistant Resident in Surgery.*

Luther E. Barnhardt, M.D. (Duke, 1958), *Assistant Resident in Orthopaedics, Durham VA Hospital.*

Frank H. Bassett, M.D. (Louisville, 1957), *Assistant in Orthopaedics.*

John H. Bell, M.D. (Duke, 1958), *Assistant Resident in Orthopaedic Pathology, Durham VA Hospital.*

Thomas G. Boland, M.D. (Oregon, 1958), *Assistant Resident in Otolaryngology.*

Bienvenido P. Cabotaje, M.D. (Santo Tomas, 1956), *Assistant Resident in Anesthesiology.*

Thomas H. Collawn, M.D. (Maryland, 1952), *Assistant Resident in Anesthesiology.*

H. Robert Crago, M.D. (Columbia, 1958), *Assistant Resident in Surgery.*

J. Burns Creighton, Jr., M.D. (Duke, 1957), *Assistant Resident in Ophthalmology.*

Horace B. Cupp, M.D. (Duke, 1955), *Assistant Resident in Neurosurgery.*

Olgard Dabbert, M.D. (San Marcos, Peru, 1958), *Assistant Resident in Orthopaedics, Watts and Lincoln Hospitals.*

Hugo L. Deaton, M.D. (Columbia, 1957), *Assistant Resident in Surgery.*

Herbert T. Dukes, M.D. (Duke, 1954), *Assistant Resident and Fellow in Neurosurgery.*

John Steed Evans, M.D. (Duke, 1958), *Assistant Resident in Surgery.*

Philip J. Ferris, M.D. (Johns Hopkins, 1958), *Assistant Resident in Surgery.*

William T. Grimsley, M.D. (Bowman Gray, 1952), *Assistant Resident in Anesthesiology.*

John M. Harper, M.D. (Michigan, 1956), *Assistant Resident in Surgery.*

Charles J. Hartsell, M.D. (Duke, 1958), *Assistant Resident in Anesthesiology.*

Shattuck W. Hartwell, M.D. (Michigan, 1954), *Assistant Resident in Plastic Surgery.*

Austin A. Herr, M.D. (Johns Hopkins, 1957), *Assistant Resident in Otolaryngology.*

William S. Houck, Jr., M.D. (South Carolina, 1956), *Assistant Resident and Instructor in Surgery.*

Ralph M. Howse, M.D. (Duke, 1957), *Assistant Resident in Urology.*

Armstead B. Hudnell, M.D. (Alabama, 1955), *Assistant Resident in Ophthalmology.*

William E. Huger, Jr., M.D. (Emory, 1953), *Assistant Resident in Plastic Surgery.*

James R. Jackson, M.D. (Duke, 1956), *Assistant Resident in Neurosurgery and Fellow in Neurology.*

Paul A. Johnson, M.D. (Duke, 1957), *Assistant Resident in Surgery.*

Paul C. Kemmerly, M.D. (Oklahoma, 1958), *Assistant Resident in Anesthesiology.*

Robert A. Keppel, M.D. (Johns Hopkins, 1953), *Assistant Resident and Instructor in Surgery.*

Fred von Kessel, M.D. (Frankfort, Germany, 1954), *Assistant Resident in Plastic Surgery.*

Elizabeth Hart King, M.D. (Duke, 1958), *Assistant Resident in Otolaryngology.*

Thomas A. Kirkland, Jr., M.D. (Duke, 1958), *Assistant Resident in Surgery.*

Philip C. Kistler, M.D. (Vanderbilt, 1956), *Assistant Resident and Instructor in Surgery.*

James M. Lee, M.D. (Duke, 1958), *Assistant Resident in Surgery.*

Shaotsu Lee, M.D. (Taiwan, China, 1953), *Assistant Resident in Anesthesiology.*

Harold J. Lefkoff, M.D. (Georgia, 1945), *Assistant Resident in Otolaryngology.*

John F. Lamler, D.M.D. (Alabama, 1958), *Assistant Resident in Oral Surgery.*

Edwin J. Lilly, M.D. (Ohio State, 1957), *Assistant Resident in Anesthesiology.*

Robert J. Macaulay, M.D. (George Washington, 1956), *Assistant Resident in Urology.*

M. Stephen Mahaley, M.D. (Duke, 1959), *Assistant Resident in Neurosurgery.*

Charles L. Maimbourg, M.D. (Oklahoma, 1958), *Assistant Resident in Anesthesiology.*

Guido E. Matton, M.D. (Ghent, Belgium, 1953), *Assistant Resident in Plastic Surgery.*

Elliott Mendenhall, M.D. (Baylor, 1955), *Assistant Resident in Surgery.*

George F. Miller, Jr., M.D. (George Washington, 1958), *Assistant Resident in Surgery.*

Calvin H. Mitchell, M.D. (Duke, 1958), *Assistant Resident in Ophthalmology.*

Nelson A. Moffat, M.D. (Chicago, 1955), *Assistant Resident in Urology.*

Ander M. Mumford, M.D. (Jefferson, 1941), *Assistant Resident in Otolaryngology.*

Glenn Musselman, M.D. (Temple, 1954), *Assistant in Orthopaedics, N. C. Orthopaedic Hospital, Gastonia, N. C.*

Havner H. Parish, Jr., M.D. (Washington Univ., 1956), *Assistant Resident in Urology.*

Edwin C. Pound, M.D. (Emory, 1954), *Assistant Resident in Plastic Surgery.*

Donald W. Richman, M.D. (George Washington, 1956), *Assistant Resident in Ophthalmology.*

John M. Roberts, M.D. (Columbia, 1957), *Assistant Resident in Orthopaedics.*

James F. Schauble, M.D. (Johns Hopkins, 1954), *Assistant Resident and Instructor in Surgery.*

Warren W. Sears, M.D. (Bowman Gray, 1953), *Assistant Resident in Anesthesiology.*

Siedell L. Soss, M.D. (Washington, 1955), *Assistant Resident in Otolaryngology.*

Otto K. Stewart, M.D. (Georgetown, 1952), *Assistant Resident in Orthopaedics.*

Delford L. Stickel, M.D. (Duke, 1953), *Assistant Resident and Instructor in Surgery.*

Eugene A. Thomason, M.D. (South Carolina, 1948), *Assistant Resident in Anesthesiology.*

James C. Thrower, M.D. (South Carolina, 1958), *Assistant Resident in Anesthesiology.*

George T. Tindall, M.D. (Johns Hopkins, 1952), *Assistant Resident and Fellow in Neurosurgery.*

John S. Turner, Jr., M.D. (Emory, 1955), *Assistant Resident in Otolaryngology.*

William T. Weaver, M.D. (Duke, 1958), *Assistant Resident in Surgery.*

George H. Welch, Jr., M.D. (Duke, 1953), *Assistant Resident and Instructor in Surgery.*

John A. Wheliss, M.D. (Columbia, 1952), *Assistant Resident in Ophthalmology.*

INTERNS

William C. Butterfield, M.D. (Yale, 1959), *Intern in Surgery.*
Clyde B. Cox, Jr. M.D. (Johns Hopkins, 1959), *Intern in Surgery.*
John M. DuBose, M.D. (Johns Hopkins, 1959), *Intern in Surgery.*
Herbert G. Ewy, M.D. (Johns Hopkins, 1959), *Intern in Surgery.*
James P. Gills, M.D. (Duke, 1959), *Intern in Surgery.*
James M. Heid, D.D.S. (Pittsburgh, 1959), *Intern in Oral Surgery.*
William R. Jones, M.D. (Pennsylvania, 1959), *Intern in Surgery.*
James Fletcher Lee, M.D. (Duke, 1960), *Intern in Surgery.*
Garrell C. Noah, M.D., (Emory, 1959), *Intern in Surgery.*
Barry P. Norton, M.D. (Duke, 1959), *Intern in Surgery.*
Philip H. Pearce, M.D. (Duke, 1960), *Intern in Surgery.*
Jerome S. Plasse, M.D. (N. Y. Coll. Med., 1959), *Intern in Surgery.*
Marvin Pomerantz, M.D. (Rochester, 1959), *Intern in Surgery.*
Richard S. Riggins, M.D. (Duke, 1960), *Intern in Surgery.*
Frank A. Stuart, M.D. (Duke, 1960), *Intern in Surgery.*
Robert L. Swearingen, M.D. (Baylor, 1959), *Intern in Surgery.*
Roger G. Vieth, M.D. (Duke, 1959), *Intern in Surgery.*
James Latane Ware, M.D. (Med. Coll., Va., 1959), *Intern in Surgery.*
Robert H. Wilkins, M.D. (Pittsburgh, 1959), *Intern in Surgery.*

General Surgery. In the *second* year, the students attend lectures and demonstrations in surgical physical dagnosis which are integrated with the over-all course in Physical Diagnosis. They also have the opportunity to examine patients with surgical diseases under the supervision of a surgical instructor. In another phase of the second year surgical program, a four week course is given in "Defense Surgery" under the auspices of the MEND program. Various aspects of traumatic surgery and simple life saving procedures are taught to each individual student on experimental animals under conditions closely simulating those in human surgery. The course includes a one day visit to Fort Bragg for a demonstration of the management of mass casualties. A two week course in radiation biology given by the Department of Radiology is integrated with the surgical program. The *junior* students, during their surgical quarter, are assigned to the wards as clinical clerks in general and thoracic surgery, plastic surgery and neurosurgery. During one half of the quarter, they are assigned to the wards at the V.A. Hospital. The students usually assist in the operative treatment of their patients. The surgical students in the *senior* year are assigned to all Surgical Clinics and, in addition, serve as clinical clerks working on the wards in Orthopaedics, Urology, Otolaryngology and Ophthalmology. In groups of two for the proportionate time available they are assigned in rotation to the operating room for Anesthesia and to the emergency division of the Out-Patient Clinic for experience in the diagnosis and care of urgent conditions.

Otolaryngologic Division. An introductory course of five hours' instruction in the use of otolaryngological instruments, with a review of normal anatomy, is given to second-year students. Senior students in the surgical quarter are assigned for two weeks to the service, during which time they devote their duties to out-patient, ward work —both public and private, operating room and are available for all ward rounds. Nine hours of didactic lectures are given in the surgical quarter. A hearing-speech clinic has been initiated. Evaluation of hearing is being done with specialized equipment in sound-treated-rooms. Time-consuming hearing tests, such as galvanic skin response, are done by special appointments.

Ophthalmologic Division. Second-year students as a part of the course in physical diagnosis are instructed in the use and application of the ophthalmoscope, perimeter, and other diagnostic instruments commonly used in Ophthalmology. Fourth-year students are assigned for one week (39 hours) to the ophthalmic division where opportunity is provided for instruction in ophthalmic disease, in the treatment of ophthalmic emergencies, and in recognition of ophthalmic signs useful in the over-all evaluation of the patient in relation to systematic disease. Fourth-year students attend weekly rounds in medical ophthalmoscopy and neurophthalmology during the surgical assignment. An elective is offered during the free period for students interested in ophthalmology.

Orthopaedic Division: During the surgical quarters the junior and senior students attend weekly rounds in orthopaedics and fractures. Students in their senior surgical quarter are assigned in rotation to the orthopaedic clinics. These students also attend all orthopaedic staff rounds, assist in orthopaedic operating rooms and attend the Journal Club meeting and all basic science lectures for the graduate students. An elective course in the treatment of fractures, limited to three students, is offered during the junior and senior surgical quarters. Also elective courses are offered in physical therapy and in cerebral palsy during these quarters. Arrangements may be made for the students who so desire to do research or experimental work. The students may also attend the state orthopaedic clinics.

Urologic Division. In the second year students are given a course of lectures and practical demonstrations in urologic physical diagnosis in the normal individual. Ward rounds on urologic patients are given every Saturday at 8:30 A.M. for third- and fourth-year students in their surgical quarter. Small groups are selected from the senior surgical group of students and assigned in rotation to the urologic department for concentrated study for a two-week period. They spend all of their time working with the house patients and out-patients in Urology Clinic. They attend all Urology Rounds,

Staff Conferences and Journal Club Meetings. Rounds are given also every Thursday afternoon at 4:00 P.M. for the students in their surgical quarter. The students assigned to urology, work with the upper staff every morning and the upper and house staff in the urology clinic in the afternoon. There is the closest association and constant supervision of these students by both the upper and house staff.

Division of Plastic, Maxillofacial, and Oral Surgery: Didactic lectures and patient demonstrations are given to both the third and fourth-year students to familiarize them with the basic principles of wound healing and repair, plastic, reconstructive and reparative procedures. Beside ward rounds, demonstrations are held twice weekly to illustrate the phenomena of trauma, disease and reconstruction. Third-year students are assigned plastic surgery cases and patients and follow them from admission to the operating room and through convalescence until discharge from the hospital. Fourth-year students work in the plastic surgery clinic which meets each afternoon, Monday through Friday, with special reference to Wednesday which is the plastic surgery and oncology return or follow-up day. Opportunity is afforded interested students to observe moulage, cast work, cosmetic restoration of color and the making of prosthetic appliances, etc. The Oral Surgery Clinic has three dentists and oral surgeons in attendance and is in operation five and one-half days each week. Associated closely and allied with the Division of Plastic Surgery is the medical speech pathologist and audiologist and the orthodontist.

The Division of Medical Speech Pathology will work in close cooperation with the division of plastic and oral Surgery, the division of otolaryngology, and the departments of pediatrics and psychiatry. Weekly lectures are given to familiarize students with the various types of speech defects and abnormalities which are encountered in both children and adults. The pre- and postoperative followup cleft palate patients are seen and evaluated each Wednesday afternoon in conjunction with the plastic surgical clinic. Clinics will be arranged as desired with other departments. Speech instruction and therapy are given daily by appointment.

Neurosurgical Division. During all four quarters, separate weekly ward rounds are held for the junior and senior surgical groups. Emphasis in these rounds is placed upon the recognition of neurosurgical problems, followed by observation of the operative and post-operative procedures. Weekly x-ray and pathological conferences are held, and these may be attended by interested individuals. Tumor clinic conferences are held bi-monthly, on each second and third Thursday of the month.

Anesthesiology Division. Second year students are instructed in the fundamentals of anesthesia during operative procedures on animals. They also are given a practical demonstration of anesthetic drugs and techniques during the course in pharmacology. Third year students are given a series of lectures stressing cardiac arrest and resuscitation, oxygen therapy techniques and treatment of the patient in shock. Senior year students are given a ten day concentrated course of training in the practical administration of anesthetics, during which time they observe and administer anesthetics under the supervision of staff anesthesiologists.

Undergraduate Cancer Training Program

(Supported by a grant-in-aid from the USPHS)
Coordinator: Wiley D. Forbus, M.D.

In the clinical years, the instruction of the student in the care of cancer patients is centered around the patient. During the third-year the student is assigned to the wards where he participates in all phases of the care of patients with cancer or other diseases (diagnosis, pre- and post-operative care, and assisting in the operation). He observes the lesion in situ, examines it in the fresh state, follows the specimen through the pathologic laboratory, and studies the prepared slides for microscopic appearance, thereby learning the pathology and checking on the accuracy of his own diagnosis.

The student thus participates in the diagnostic studies on the patient, makes his own diagnosis, observes the reaction of the patient and his family to his condition, follows the therapeutic procedures and the results obtained, correlates these with the underlying pathology, assists with the postoperative care, and in the discharge instructions. During this period there is more formal instruction in surgical pathology carried on jointly by a pathologist and a surgeon.

This training program is supplemented by a tumor registry where accurate follow up records are kept with the results summarized and made available to staff and students. Thus they can know the year by year results of treatment of large numbers of patients as expressed in percentages of those (1) free of recurrence, (2) apparently cured, (3) having a recurrence, or (4) dead of recurrence at varying times after onset of the disease and the institution of therapy.

Standing Committees of The School of Medicine

ADMISSIONS

J. E. Markee (Chairman), Cherny, Fetter, Hendrix, Howell, Hull, W. P. J. Peete, Rhoads.

BEAUMONT

J. W. Beard (Chairman), Engel, Markee, Woodhall.

BORDEN AWARD

K. S. Grimson (Chairman), Hendrix, Pickrell.

BUILDING

L. E. Swanson (Chairman), Beard, Busse, Carter, Clark, Forbus, Handler, Harris, Hart, Stead, Woodhall.

CANCER TRAINING

W. D. Forbus (Chairman), Hart, Harris, Reeves.

CARDIO-VASCULAR TRAINING

K. S. Grimson (Chairman), Hall, Harris, Ingles, Stead.

CLINICAL RESEARCH

F. L. Engel (Chairman), E. A. Davidson, Rundles, Stempfel, Woodhall.

CONTINUATION EDUCATION

W. M. Nicholson (Chairman), Baylin, Markee.

CO-ORDINATION OF PARAMEDICAL SERVICES

Helen L. Kaiser (Chairman), Misses Clark and Ratliff, Drs. DeMaria, Markee, W. Smith, Stephen, Wyngaarden, Messrs. Cahoon and Frenzel.

CURRICULUM

Barnes Woodhall (Chairman), Busse, Callaway, DeMaria, Frenzel, Harris, Howell, Hull, E. C. Long, Markee, McIntosh, W. P. J. Peete, Sieker, Young.

DURHAM VETERANS HOSPITAL

W. P. J. Peete (Chairman), Baylin, Lowenbach, Ross, Wyngaarden.

HANES AND UNITED FUND

D. T. Smith (Chairman), Harris, Hart, Semans.

HOSPITAL POLICY

C. H. Frenzel (Chairman), Busse, Carter, Harris, Hart, Stead, Young.

HOSPITAL RECORDS

E. L. Persons (Chairman), Bufkin, Clark, Frenzel, Gardner, Goldner.

INTERNSHIPS

W. G. Anlyan (Chairman), DeMaria, McIntosh, Peete.

ISOTOPE

P. Handler (Chairman), Baylin, Frenzel, Harris, Nicholson, Reeves, Sanders, Woodhall.

LIBRARY

Mrs. J. H. Semans (Chairman), Bernheim, Engel, Gardner, Long, D. T. Smith.

MEDICAL EDUCATION FOR NATIONAL DEFENSE

W. G. Anlyan and W. P. J. Peete (Co-Chairmen), Barry, Clippinger, Fetter, Frenzel, Georgiade, Goldner, Hohman, Lowenbach, Mitchell, Overman, Sanders, E. White, R. Wilson.

OUT PATIENT DEPARTMENT

Roy Parker (Chairman), Anlyan, Bogdonoff, DeMaria, Ingles, Llewellyn, W. P. J. Peete, Young.

PATIENT POLICY

L. E. Swanson (Chairman), Clark, Cobb, Crenshaw, Dees, Ratliff, Reeves, Sealy, Wyngaarden.

PHYSICAL AND OCCUPATIONAL THERAPY

L. D. Baker (Chairman), Frenzel, Hall, Huckabee, Kaiser, Lowenbach, Markee, Persons.

REHABILITATION

J. H. Semans (Chairman), Busse, Frenzel, Goldner, D. Henry, Jacobansky, Kaiser, Stead, Woodhall.

SOCIAL SERVICE

W. M. Nicholson (Chairman), Busse, Carter, Frenzel, Harris.

STUDENT FELLOWSHIPS

E. C. Long (Chairman), Kunkle, Sealy.

STUDENT TECHNICIANS

W. W. Smith (Chairman), Anlyan, Baker, Howell, McIntosh, Smith, Taylor.

TRENT PRIZE

J. E. Markee (Chairman), Carter, Gardner.

Duke Hospital

Administrative Staff

Charles H. Frenzel, A.B. (Duke, 1941), *Superintendent and Associate Professor of Hospital Administration.*

Louis E. Swanson, A.B. (Hamline, 1941), *Assistant Superintendent and Associate Professor of Hospital Administration.*

Charles C. Boone, A.B. (Duke, 1951), *Assistant Superintendent and Instructor in Hospital Administration.*

Donald S. Smith, II, A.B. (Dartmouth, 1951), M.H.A. (Minnesota, 1953), *Administrative Assistant and Instructor in Hospital Administration.*

Ralph L. Drake, B.S. (UNC, 1950), *Director of the Clinics.*

Richard A. Bindewald, A.B. (Furman, 1953), *Personnel Director.*

Paul W. Aitken, A.B. (Morris Harvey, 1951), B.D. (Duke, 1955), *Chaplain.*

Private Diagnostic Clinic Staff

C. H. Cobb, Ph.G. (UNC, 1933), *Business Manager, Medical Division.*

Henry Bertrand, B.B.A. (Mississippi State, 1949), B.S. (Sul Ross State, 1950), *Assistant Business Manager, Medical Division.*

R. N. Crenshaw, *Business Manager, Surgical Division.*

H. D. Maynard, B.S. (UNC, 1947), M.A. (UNC, 1949), *Assistant Business Manager, Surgical Division.*

Technical Staff and Heads Hospital Divisions

Esther V. Ratliff, M.S. (Kansas State, 1931), *Director and Associate Professor of Dietetics.*

I. Thomas Reamer, Ph.G. (Maryland, 1924), *Pharmacist and Associate in Pharmacy.*

J. Harned Bufkin, R.N., R.R.L. (Indiana, 1922), *Medical Record Librarian and Associate Professor of Medical Record Library Science.*

Lelia R. Clark, R.N. (Mt. Sinai, 1932), B.S. (Columbia, 1947), M.A. (Columbia, 1948), *Director Nursing Service and Professor of Nursing.*

Helen Louise Kaiser, R.P.T. (Harvard, 1921), *Director and Associate Professor of Physical Therapy.*

Bert R. Titus, *Director and Instructor of Orthosis and Prosthesis.*

Elon Henry Clark, *Medical Artist and Professor of Medical Art and Illustration.*

Martha J. Scoggins, *Executive Housekeeper.*

N. Flinton Carden, *Supervisor, Printing Department.*

Leatrice B. Emory, *Supervisor, Electrocardiographic and Basal Metabolic Laboratory.*

Preston W. Smith, *Supervisor, Private Medical Laboratory and Technical Associate in Laboratory Science.*

Edward T. Parrish, *Manager, Laundry.*

Gretchen J. Cheek, R.N. (Duke, 1934), *Central Supply Services.*

Marion Batchelder, R.N. (PB Brigham, 1920), *Supervisor, Operating Rooms Services.*

C. Ronald Stephen, M.D. (McGill, 1940), *Anesthesiologist and Professor of Anesthesiology.*

Robert J. Reeves, M.D. (Baylor, 1924), *Radiologist and Professor of Radiology.*

Aaron P. Sanders, M.S. (Rochester, 1952), *Director, Isotope Laboratories and Assistant Professor of Radiology and Biophysics.*

Ivan W. Brown, M.D. (Duke, 1940), *Director, Blood Bank and Associate Professor of Surgery.*

Haywood M. Taylor, Ph.D. (UNC, 1924), *Director, Biochemistry Laboratories, Professor of Toxicology and Associate Professor of Biochemistry.*

Internships and Residencies

Straight internships of one year duration are available in Medicine, Surgery, Obstetrics-Gynecology, Pediatrics, Psychiatry and Pathology. Mixed internships are available in Obstetrics and Pediatrics. A stipend of $25 per month is offered in Medicine, Surgery and Pediatrics plus room, board, laundry and uniforms. An allowance of $12.50 is paid to married house officers in lieu of a room in the house staff quarters. Appointments are from July 1 through June 30, although special arrangements can be made with individual department heads.

Assistant Residencies and Residencies are available in the following services.

Anesthesiology.....C. Ronald Stephen, M.D.
Internal Medicine.....(Chm.) E. A. Stead, Jr., M.D.
Allergy.....Oscar C. E. Hansen-Prüss, M.D.
Cardiology.....E. S. Orgain, M.D.
Dermatology.....J. Lamar Callaway, M.D.
Endocrinology.....Frank L. Engel, M.D.
Gastroenterology.....Julian M. Ruffin, M.D.
Hematology.....R. Wayne Rundles, M.D.
Neurology.....E. Charles Kunkle, M.D.
Pulmonary Disease.....E. E. Menefee, Jr., M.D.
Obstetrics & Gynecology.....(Chm.) Bayard Carter, M.D.
Pathology.....(Chm.) Wiley D. Forbus, M.D.
Pediatrics.....(Chm.) Jerome S. Harris, M.D.
Allergy.....Susan C. Dees, M.D.
Cardiology.....Madison Spach, M.D.
Endocrinology.....Robert S. Stempfel, M.D.
Hematology.....Doris Ahlee Howell, M.D.
Psychiatry.....(Chm.) E. W. Busse, M.D.
Radiology.....(Chm.) Robert J. Reeves, M.D.
Surgery-General.....(Chm.) Deryl Hart, M.D.
Neurosurgery.....Barnes Woodhall, M.D.
Ophthalmology.....W. Banks Anderson, M.D.
Oral Surgery.....Nicholas G. Georgiade, M.D.
Orthopaedics.....Lenox D. Baker, M.D.
Otolaryngology.....Watt W. Eagle, M.D.
Plastic Surgery.....Kenneth L. Pickrell, M.D.
Thoracic Surgery.....Will C. Sealy, M.D.
Urology.....Edwin P. Alyea, M.D.
Dentistry.....Norman F. Ross, D.D.S.

All Services are approved by the Council on Medical Education and Hospitals of the American Medical Association.

Application forms for all internships may be obtained by writing to the Superintendent of Duke Hospital or to the above chairmen of departments, Duke University Medical Center, Durham, North Caro-

lina. Graduates of any Class A medical school are eligible for internships. Appointments are open to women and to graduates of accredited foreign medical schools. Duke Hospital participates in the National Intern Matching Program, Inc.

After completion of an internship in Duke Hospital or in another acceptable hospital, a certain number may be appointed as assistant residents in the above listed specialties plus Biochemistry, the Student Health Service or as fellows of the Private Diagnostic Clinics at a salary of $250 to $800 per year plus maintenance. A smaller number may be eventually promoted to residencies in the above listed services at an annual salary of $500 to $1,300 per year plus maintenance. Application should be made to the head of the department concerned.

The Hospital and School of Medicine are an integral part of the Duke University campus, and its educational, recreational and athletic facilities are available for the Resident Staff.

The Durham Veteran's Hospital is located within walking distance of Duke Hospital, and is integrated with the Duke Hospital house staff training program. House officers on certain services may be assigned to either hospital for parts of a year. Administratively, the hospitals are separate but educationally they are closely integrated. The Medical Staff of the Veteran's Hospital is supervised by a Dean's Committee composed of faculty members of the Duke School of Medicine. Certification of training is provided by Duke Hospital.

Postgraduate Study

William M. Nicholson M.D., Professor of Medicine and Assistant Dean in Charge *of Postgraduate Education.*

Graduates in medicine are welcomed at the various specialty clinics in medicine, surgery, obstetrics and other specialties, which are held from 9:30 A.M to 12:30 P.M. each morning except Sunday. Ward-rounds are given in medicine in the mornings, as general out-patient clinics are in session in the afternoons. On each Saturday morning, there are offered three hours of formal teaching which has been approved for Category I credit with the Academy of General Practice. From 10:00 to 11:00 a formal clinic or lecture is given by one of the various departments of the Medical School. This is followed by a clinicopathologic conference from 11:00 to 12:00. These are all held in the Medical Amphitheater. Those who desire weekly programs of these exercises can obtain them by writing the Director of Postgraduate Education, Duke University Medical Center, Durham, N. C. In addition to these exercises, there are throughout the year concentrated formal types of postgraduate instruction in the way of symposia and study groups. Announcements about them will be made from time to time.

Paramedical Courses at Duke Hospital

Paramedical Coordinating Committee

Helen L. Kaiser (Chairman), Misses Clark and Ratliff, Drs. DeMaria, Markee, W. Smith, Stephen, Wyngaarden, Messrs. Cahoon and Frenzel.

Dietetics

Esther V. Ratliff, B.S., *Director and Associate Professor of Dietetics.*

Mary Helen McLachlan, B.S., M.A., *Associate Director and Associate Professor of Dietetics.*

Mary Catherine Male, B.S., M.A., *Assistant Director and Assistant Professor of Dietetics.*

Margaret L. Presley, B.S., *Administrative Dietitian.*

Margaret Ann Brown, B.S., *Administrative Dietitian.*

Ruth V. Hanrihan, B.S., M.A., *Therapeutic Dietitian.*

Shirley Manning, B.S., *Therapeutic Dietitian.*

Kate Mahood Riggins B.S., *Teaching Dietitian.*

Vivian J. Welk, B.S., *Assistant Administrative Dietitian.*

The Dietetic Internship which begins on September 1 is approved by The American Dietetic Association. Fourteen interns may be admitted. Candidates for admission must have a Bachelor's Degree from an accredited college or university with a major in foods and nutrition or institutional management. The courses required and those recommended for entrance are outlined by *The American Dietetic Association.* The Internship offers experience in the following areas: teaching, food service administration, therapeutics, pediatrics, nutrition clinic and public health. After successful completion of the year's internship a certificate is granted by the Committee on Health Affairs of the Duke University Medical Center, and recommendation is given for membership in The American Dietetic Association.

More information may be obtained by writing to the Director of Dietetics, Duke University Medical Center, Durham, North Carolina.

Hospital Administration

Charles H. Frenzel, A.B. (Duke, 1941), *Superintendent and Associate Professor of Hospital Administration.*

Louis E. Swanson, A.B. (Hamline, 1941), *Assistant Superintendent and Associate Professor of Hospital Administration.*

Charles C. Boone, A.B. (Duke, 1951), *Assistant Superintendent and Instructor in Hospital Administration.*

Donald S. Smith, II., A.B. (Dartmouth, 1951), M.H.A. (Minnesota, 1953), *Administrative Assistant and Instructor in Hospital Administration.*

Ralph L. Drake, B.S. (UNC, 1950), *Director of the Clinics.*

Richard A. Bindewald, A.B. (Furman, 1953), *Personnel Director and Instructor in Hospital Administration.*

Theodore W. Minah, B.S. (Cornell, 1932), *Advisor in Food Service Administration.*

Clarence H. Cobb, Ph.G. (UNC, 1933), *Business Manager, Medical Division, and Instructor in Hospital Administration.*

Marshall I. Pickens, A.B. (Duke, 1925), M.A. (Duke, 1926), *Director Hospital and Orphans Section, The Duke Endowment, and Associate in Hospital Administration.*

George P. Harris, A.B. (Duke, 1926), *Field Director Hospital and Orphans Section, The Duke Endowment, and Instructor in Hospital Administration.*

James R. Felts, Jr., *Assistant to the Director Hospital and Orphans Section, The Duke Endowment, and Instructor in Hospital Administration.*

H. Carl Rowland, B.S. (Davidson, 1942), *Field Representative Hospital and Orphans Section, The Duke Endowment, and Instructor in Hospital Administration.*

B. G. McCall, B. S. (Clemson, 1950), *Field Representative Hospital and Orphans Section, The Duke Endowment, and Instructor in Hospital Administration.*

LECTURERS

E. C. Bryson, LL.B., *Professor of Law, Duke University.*

Watson S. Rankin, M.D., *Consultant, Hospital and Orphans Section, The Duke Endowment.*

Charles E. Prall, Ph.D., *Dean, School of Education, Woman's College, University of North Carolina.*

G. C. Henricksen, A.B., M.A., C.P.A., *Business Manager and Comptroller, Duke University.*

A. S. Brower, A.B. *Treasurer, Duke University.*

E. G. McGavran, M.D., M.P.H., *Dean, School of Public Health, University of North Carolina.*

Charles P. Cardwell, B.S., *Director, Medical College of Virginia Hospital.*

Joseph E. Barnes, M.H.A., *Director, Rex Hospital.*

J. Lyman Melvin, *Administrator, Park View Hospital.*

Jacque B. Norman, A.B., A.I.A., *Hospital Consultant.*

Sample B. Forbus, A.B., *Director, Watts Hospital.*

J. Minetree Pyne, B.S., *Administrator, Alamance County Hospital.*

ADMINISTRATIVE RESIDENTS

Walter G. Craven, B.S.
Gordon S. Crispin, B.S.
Elwood R. Eason, A.B.
James N. Kulpan, A.B.
J. Daniel Lewis, A.B.
Robert J. Newton, A.B.
James F. Shinn, A.B.
Fred L. Winsor, A.B.

Eight internships in hospital administration leading to a certificate are available to university graduates whose character, tact, and ability for leadership are good, and whose academic standing is high. These internships are of two years' duration and pay a small salary in addi-

tion to room, board, and laundry. Vacations of two weeks are allowed during each year of internship.

The instruction is practical rather than theoretical in emphasis. The interns are rotated through seven different assistant administrative positions in the Hospital. There is also a weekly seminar lasting two hours and two classes lasting one hour each during the week.

The interns may register in the Graduate School of Duke University, and receive the A.M. degree after the successful completion of a thesis and twenty-four semester hours of university courses in various fields. This additional work will add one year to the program. Further information may be obtained by writing to the Superintendent, Duke Hospital, Durham, N. C.

Medical Art and Illustration

Elon H. Clark, *Professor of Medical Art and Illustration.*
Robert L. Blake, *Associate in Medical Art and Illustration.*
Henry F. Pickett, *Associate in Medical Photography.*
Raymond L. Howard, *Instructor in Medical Photography.*
Thurman M. Ellis, *Medical Photographer.*
William J. Wallace, *Assistant Photographer.*
Donald G. Powell, *Assistant Medical Artist.*
V. Joy Perkins, *Technical Artist.*

The function of this Division is to produce visual aids by way of various art and photographic methods for staff members allied to medicine. These visual aids are used to enchance the medical records and to aid in research and education. Services offered by this Division are: 1. Medical Art: Illustrations, by means of various artistic techniques, depicting anything perceptible to the eye, the existing but unseen and even the theoretic, as well as mechanical drawings, diagram, charts, graphs, lettering, casts, models, exhibits, etc. 2. Medical Photography: Illustrations of anything to which available photographic equipment will respond. This division produces still and motion pictures, microphotographs, pictures of the retinae, photographic copies, film strips, lantern slides, enlargements and contact prints. Services offered directly for the patient's benefit are: Production of various types of anatomical prostheses and instruction in the use of opaque cosmetics. Facilities for individual training in specific techniques or methods employed by this division are available. No academic credit is given. Prerequisites, tuition, time and type of training are determined by the Chairman of this division. No regular courses of instruction in medical art and photography or their allied fields are offered.

Medical Technology

Wirt W. Smith, M.D., *Associate in Experimental Surgery, Director of the Course in Medical Technology.*

Haywood M. Taylor, Ph.D., *Professor of Toxicology and Associate Professor of Biochemistry.*

David T. Smith, M.D., *James B. Duke Professor of Bacteriology and Associate Professor of Medicine.*

Oscar C. E. Hansen-Prüss, M.D., *Professor of Medicine.*

Duncan C. Hetherington, Ph.D., M.D., *Professor of Anatomy.*

Norman F. Conant, Ph.D., *Professor of Mycology and Associate Professor of Bacteriology.*

R. Wayne Rundles, M.D., *Associate Professor of Medicine.*

Doris A. Howell, M.D., *Associate Professor of Pediatrics.*

Hilda Pope Willett, Ph.D., *Associate Professor of Bacteriology.*

Mary A. Poston, A.M., *Associate in Bacteriology.*

Hoyle W. Craig, *Technical Associate in Bacteriology.*

Preston W. Smith, *Technical Associate in Hematology.*

Leo B. Daniels, *Technical Associate in Biochemistry.*

The course in laboratory technique, which includes training in blood chemistry, clinical microscopy, bacteriology, serology, basal metabolism, etc., is approved by the Board of Schools of Medical Technology of the American Society of Clinical Pathologists. The course lasts twelve months, the next classes begin February and September 1959. The registration fee is $75.00 which includes tuition, student health and diploma fee for the entire course. There are no additional fees except for breakage. Other student activity fees are optional. The students live in town at their own expense. A minimum of two years of approved college work is required. Upon successful completion of the course the student is qualified to take the examination for certification as a Registered Medical Technologist. Information as to the specific requirements may be obtained from Dr. Wirt W. Smith, Duke University Medical Center, Durham, North Carolina.

Nurse Anesthesia

Charles Ronald Stephen, M.D.C.M., D.A., *Professor of Anesthesiology and Chief of Division of Anesthesiology.*

Mary B. Campbell, R.N., M.A.A.N.A., *Instructor in Nurse Anesthesia and Chief Nurse Anesthetics.*

Evelyn E. Auld, R.N., M.A.A.N.A., *Instructor in Nurse Anesthesia and Chief Nurse Anesthetist, Watts Hospital, Durham, North Carolina.*

Mary M. Gardner, R.N., M.A.A.N.A., *Educational Program Director.*

Leola A. Glenn, R.N., M.A.A.N.A., *Assistant Nurse Anesthetist.*

Frances Rowland Perry, R. N., M.A.A.N.A., *Assistant Anesthetist.*

Annie Mae Truitt, R.N., M.A.A.N.A., *Assistant Nurse Anesthetist*

Martha Brown, R.N., M.A.A.N.A., *Assistant Nurse Anesthetist*

Patricia C. Ramsey, R.N., M.A.A.N.A., *Assistant Nurse Anesthetist.*

Courses available to graduate nurses include an eighteen months' course for nurses who have had no experience in anesthesia, and a twelve months' course for nurses who have had five years of practical experience but no formal training in the specialty. Instruction embraces the theoretic aspect and clinical application of all drugs and techniques in accepted usage. The program is divided into quarters. The major part of the basic theoretic instruction is given during the first three quarters. After a preclinical period of eight weeks, clinical practice runs parallel with the theoretic program. One class is accepted annually and enrolled on January 15. All appointments of the current year are made by September 1 of the preceding year. Graduates of these courses are eligible to take the examination given by the American Association of Nurse Anesthetists. Tuition is $150.00. Additional information concerning these programs for nurses may be obtained from Mary B. Campbell, R.N., Box 3204, Duke University Medical Center, Durham, North Carolina.

Nursing

Lelia R. Clark, R.N., M.A., *Director of Nursing Service.*

Louise M. Beard, R.N., B.S., *Coordinating Instructor of Practical Nursing Division.*

Kathryn J. Gray, R.N., *Coordinating Instructor of Practical Nursing Division.*

Practical Nursing Division of the Vocational Education Department of the Durham City Schools, Duke Unit. After four months of classroom instruction at the Hillside High School eight months are spent in classes and practical training at Duke Hospital. At the completion of this course the student receives a certificate in practical nursing and is eligible for licensure as a practical nurse in North Carolina.

Physical Therapy

Helen Louise Kaiser, R.P.T., *Associate Professor of Physical Therapy, and Director of Physical Therapy and Occupational Therapy Departments.*

Grace Cunningham Horton, B.S., R.P.T., *Associate in Physical Therapy, and Supervisor of Treatment Division.*

Eleanor M. Flanagan, A.B., M.A., R.P.T., *Associate in Physical Therapy.*

Wilma Abrams, B.S., M.A., R.P.T., *Instructor in Physical Therapy, and Coordinator of Educational Program.*

Lois Claire Perkins, B.S., M.A., R.P.T., *Instructor in Physical Therapy.*

Carol Creelman Hodgins, R.P.T., O.T.R., *Co-ordinator of Physical and Occupational Therapies.*

James D. Chan, B.S., M.A., R.P.T., *Research Associate in Physical Therapy.*

Beth Ussher, B.A., R.P.T., *Research Associate in Physical Therapy.*

Constance Warren Peake, A.B., R.P.T., *Secretary-Recorder for the Curriculum in Physical Therapy.*

R. Idell Landrum, B.S., R.P.T., *Assistant Clinical Supervisor*

Nancy J. Warner, B.S., R.P.T., *Assistant in Physical Therapy.*

Thomas D. Clapper, B.S., R.P.T., *Assistant in Physical Therapy.*
Robert A. Federchuck, B.S., R.P.T., *Assistant in Physical Therapy.*
Martha Trotter, A.B., R.P.T., *Assistant in Physical Therapy.*

A course in physical therapy, approved by the Council on Medical Education and Hospitals of the American Medical Association, is offered at Duke University under the joint auspices of the Graduate School of Arts and Sciences and the Medical Center. The program is conducted at the post-baccalaureate level, and has two phases:

(1) The fundamental courses in physical therapy are studied in the first fifteen months. The Certificate in Physical Therapy is awarded upon completion of this work. The graduate is then eligible to become a member of the American Physical Therapy Association, to take state and national licensing and registration examinations, and to work as a qualified physical therapist. During this time fifteen hours of graduate credit, which meet one-half of the graduate residence requirement, may be accumulated. (2) Later specialization in anatomy or physiology can provide the additional fifteen hours of graduate credit necessary for the Master of Arts degree, subject to Graduate School regulations. This second phase, including preparation of a thesis, may be formally scheduled in one semester.

The physical therapy course is open to men and women. Admission may be granted to a student who has received an A.B. or B.S. degree from an accredited institution. The undergraduate record should be well rounded and of such quality as to give positive evidence of capacity for success in graduate study. Included must be one year of laboratory courses in biologic sciences, chemistry, and physics; mathematics through trigonometry, and basic courses in psychology.

In special cases admission will be granted to students who have had a minimum of three years (90 semester hours) of acceptable college study including the above science requirements, and whose college will grant a baccalaureate degree upon satisfactory completion of the physical therapy program. If approved prior to registration twenty hours of undergraduate credit may be earned and applied toward a Bachelor of Arts degree. Such students will be awarded a Certificate in Physical Therapy upon completion of the fifteen months' curriculum.

The curriculum for the first fifteen months includes courses in anatomy, physiology, kinesiology, histology, pathology, psychiatry, psychology, ethics, administration, rehabilitation, and the various physical therapy procedures. Three months of clinical experience are provided on a rotation basis at Duke University Medical Center and at affiliated hospitals. Tuition and health fees for the first fifteen months are $685.00 for the certificate program without graduate

credit, or $985.00 for the graduate program. The course begins in mid-September and ends in December of the following year.

For further information write to the Director of Physical Therapy, Box 3247, Duke University Medical Center, Durham, North Carolina.

Prosthetic and Orthopaedic Appliances

Bert R. Titus, C.P., C.O., *Director and Instructor in Orthosis and Prosthesis.*
Robert O. Gooch, C.P., *Assistant Prosthetist and Orthotist.*
Percy H. Ray, *Assistant Orthotist.*

The function of this department is to produce prosthesis and orthopaedic appliances for the medical profession. Facilities for individual training in specific techniques or methods employed by this department are available. Those who complete four years' training are eligible to take the examination of American Board of Certification.

X-Ray Technology

Robert J. Reeves, M.D., *Professor of Radiology and Chairman of the Department.*
John B. Cahoon, R.T., F.A.S.X.T., *Instructor in Radiology Technic and Chief Radiological Technician, Technical Director.*
George J. Baylin, M.D., *Professor of Radiology and Associate in Anatomy.*
Aaron P. Sanders, M.S., *Assistant Professor of Radiology and Director Isotope Laboratory.*
William F. Barry, Jr., M.D., *Associate Professor of Radiology.*
Mary Jane Lockhart, A.B., R.T., A.S.X.T., *Technical Instructor in Radiology.*
Wiley R. Tice, R.T., A.S.X.T., *Technical Assistant in Radiology.*
T. Marion Griggs, A.A., R.T., A.S.X.T., *Technical Assistant in Radiology.*

The School of X-Ray Technology offers a two year training program of instruction and practical training in all divisions of the Department of Radiology.

Students are admitted the first Wednesday in September for 2 years of intensive training in the academic and practical aspects of radiographic, therapeutic and radioisotope technique.

During the second year the students are paid a stipend of $100 per month. Upon completion of the course, the student is eligible to take the National Board Examinations in X-Ray Technology, sponsored by the American Registry of X-Ray Technicians. The school is approved by the Council on Medical Education of the American Medical Association, the American Society of X-Ray Technicians and the American Registry of X-Ray Technicians.

Candidates for admission must be graduates of approved high schools and rank in the upper third of their class. Official transcript of high school and/or college grades, a list of three references and a recent photograph must be included with the application before

* Member of Canadian Physical and Occupational Therapy Association.

being considered by the Committee on Admissions. It is recommended that applicants be 20 years, or not more than 30 years of age at the time of enrollment.

A registration fee of $25 is required upon entrance and is payable to the Treasurer, Duke University, on the day of entrance. Books, supplies and uniforms are about $100. White uniforms and white shoes are required. Laundry of uniforms is furnished by the Medical Center. No living quarters are provided for paramedical students by the University and the students in X-Ray Technology live in town at their own expense. For further information or application blank, write John B. Cahoon, R.T., Technical Director, School of X-Ray Technology, Duke University Medical Center, Durham, North Carolina.

Roster of Students

FIRST-YEAR CLASS (CLASS OF 1963)

Ayers, Charles Rausch (Princeton), Charleston, S. C.
Banghart, Harry Prizer (Wesleyan), Philadelphia, Penna.
Banta, Henry David (Duke), Oak Ridge, Tenn.
Beamer, Yancey Brintle (Guilford), Mt. Airy, N. C.
Berne, Freeman Albert (USC), Columbia, S. C.
Black, Craig Grayson (Wake Forest), Asheville, N. C.
Bolton, John Charles (Virginia), St. Paul, Va.
Boone, Stephen C. (Duke), Houston, Tex.
Broughton, Joseph O., Jr. (Duke), Wilmington, N. C.
Byrnes, Thomas H., Jr. (Princeton), Charlotte, N. C.
Carlton, Thomas K., Jr., (Wake Forest), Salishury, N. C.
Carter, James Anderson (Duke), Gainesville, Ga.
Carter, William Alvin (Duke), Norfolk, Va.
Chang, Wallace Han-Jen (Duke), South Plainfield, N. J.
Church, Clay Franklin (UNC), Chapel Hill, N. C.
Cline, Robert Edward (Duke), Southern Pines, N. C.
Durrett, Ray Robert (Duke), Charleston, W. Va.
Edwards, Elmo Stephen (Davidson), Spring Hope, N. C.
Emery, John Bloom, Jr. (Maryville), Pitman, N. J.
Entman, Mark Lawrence (Florida), Jacksonville, Fla.
Epstein, Martin (Yale), West Hartford, Conn.
Farrell, James B. (Rice), Carlsbad, N. M.
Fortney, Sidney Ray (Kentucky), Harlan, Ky.
Glaser, Joel Stephen (Duke), Orlando, Fla.
Goldston, William R. (Wake Forest), Wake Forest, N. C.
Graham, Thomas Pegram, Jr. (Duke), Charlotte, N. C.
Grant, George Redd, Jr. (Duke), Fayetteville, N. C.
Gunlock, Howard David (Maryland), Bethesda, Md.
Harrison, Robert Brent (Duke), Greer, S. C.
Haslett, Nancy Rose (Miami), Hialeah, Fla.
Haworth, Chester C., Jr. (Guilford), High Point, N. C.
Hogan, Leo Booth, Jr. (Princeton), Wilmington, Del.
Holland, Warren F., Jr. (USC), Columhia, S. C.
Holmes, Lewis Ball (Princeton), McKenzie, Tenn.
Hull, William Martin, Jr. (Davidson), Rock Hill, S. C.
Hutchinson, William R., IV (Miami), DeLand, Fla.
Hyman, Barry Noel (Miami), Miami, Fla.
Imperato, Paschal John (Johns Hopkins), Pleasantville, N. Y.
James, Charles Marion (Davidson), Albemarle, N. C.
Jones, Jerry Lee (UNC), Raleigh, N. C.
Jones, Kenneth Lee (Adelphia), Brunswick, Md.
Kapp, John Paul (Duke), Galax, Va.
Kohler, Peter Ogden (Virginia), Blacksburg, Va.
Kroe, Donald James (UNC), Baltimore, Md.
Langer, Guy L., Jr. (Duke), Sarasota, Fla.
Lewis, Edward L., Jr. (Davidson), Greensboro, Ga.
Long, Eugene M., II (Davidson), Burlington, N. C.
Lucey, Donald T. (Florida), Daytona Beach, Fla.
Marcus, Elliot Lee (Duke), Tampa, Fla.
Markham, Robert Wade (UNC), Apex, N. C.
Martin, Charles R. (Duke), Wilmington, N. C.
Mayson, James S. (Univ. of the South), Dallas, Tex.
McBryde, Angus M., Jr. (Davidson), Durham, N. C.
McLaughlin, Joseph D., Jr. (George Washington), Honolulu, Hi.
McMillan, William O., Jr. (Duke), Charleston, W. Va.
Moore, Lawrence W., Jr. (VPI), Burkeville, Va.
Oliva, Philip B. (Duke), Garfield, N. J.
Poindexter, John S., III (Davidson), Savannah, Ga.
Pollard, Dulon Devon (UNC), Benson, N. C.
Porter, John Marshall (Duke), Concord, N. C.
Redding, James Oscar (Duke), Asheboro, N. C.
Robinson, Norman J. (W. Virginia), Charleston, W. Va.
Robison, Michael Lee (Duke), Anniston, Ala.
Runyan, Thomas Earl (US Mil. Acad.), Minneapolis, Minn.
Safrit, Henry Faison (Duke), Beaufort, N. C.
Saint-Amand, Nathan E. (Duke), Gaffney, S. C.
Sewell, Frank K., Jr. (Vanderbilt), Mt. Sterling, Ky.

Shimm, Stephen Jay (Duke), Coral Gables, Fla.
Sproles, Elijah T., III (Duke), Kingsport, Tenn.
Tabor, Owen Britt (Wesleyan), Tifton, Ga.
Taylor, Waller L., Jr. (Davidson), Virginia Beach, Va.
Thomas, Raymond L. (USC), Columbia, S. C.
Vanderbeek, Randall B. (Duke), Holland, Mich.
Walston, Abe, II (UNC), Walstonburg, N. C.
Young, Noel W., Jr. (Duke), Durham, N. C.
Zahler, Charles Gary (USC), Columbia, S. C.

SECOND-YEAR CLASS (CLASS OF 1962)

Alexander, John Macfie (Duke), Ridgewood, N. J.
Armstrong, George Foster, Jr. (Georgia), Washington, Ga.
Baez Garcia, Jorge Eloy (Puerto Rico), San Juan, P. R.
Baumaun, John Albert (Wisconsin), Milwaukee, Wis.
Baxley, William Allison (Pittsburgh), Akron, Ohio.
BeMiller, David LaMar (Purdue), Evansville, Ind.
Bicknell, William Jackson (Johns Hopkins), Boston, Mass.
Brown, Suzanne Linton (Sweet Briar), Pittsburgh, Penna.
Carter, Alan Bruce (Duke), Ft. Leavenworth, Kan.
Carter, Charles Edwin (Davidson), Mt. Airy, N. C.
Caskey, Charles Thomas (USC), Columbia, S. C.
Cauthen, Joseph Claud, III (Citadel), Rock Hill, S. C.
Coble, Yank David, Jr. (Duke), Burlington, N. C.
Colston, William Carroll (Davidson), Rocky Mount, N. C.
Colvin, Charles Henry, III (Washington & Lee), Birmingham, Ala.
Conna, Sherrill Alexander (Duke), Yonkers, N. Y.
Crane, James Dewar (Duke), N. Warren, Penna.
Craven, Nicholas Scott (Duke), Lexington, N. C.
Croft, Carl Louis (US Mil. Acad.), Albany, Ga.
Davis, Robert Nicholas (VPI), War, W. Va.
Dudley, Alden Woodbury, Jr. (Duke), Staten Island, N. Y.
Farmer, Joseph Clarence, Jr. (Duke), Henderson, N. C.
Farmer, Raymond Mayfield (USC), Columbia, S. C.
Fortescue, William Nicholal, Jr. (Duke), Henderson, N. C.
Foster, John Thomas (Wake Forest), Wilkesboro, N. C.
Frank, Donald Harry (Yale), Haworth, N. J.
Gebel, Emile Louis (Duke), Pittsburgh, Penna.
Gilbert, Joel Henry (Cornell), W. Orange, N. J.
Gilbert, Walter Randolph, Jr. (Emory), Griffin, Ga.
Ginn, Fred LeGray (UNC), Goldsboro, N. C.
Gonzales, Antonio Carmelo (Duke), Lares, P. R.
Grant, Robert Neil (Duke), Greensboro, N. C.
Hatcher, Martin Armstead, Jr. (Duke), Hamlet, N. C.
Holloway, Rufus Madison, Jr. (Florida), Leesburg, Fla.
Jones, Danny Brigman (Duke), Raleigh, N. C.
Kahn, Kenneth Jay (Florida), Sarasota, Fla.
Klite, Paul Don (Miami), Miami, Fla.
Kramer, Richard Spencer (Duke), Cleveland, Ohio.
Lunas, John Paul (Johns Hopkins), Cedar Grove, N. J.
McFadden, Don C., Jr. (Duke), Mt. Sterling, Ky.
Magendantz, Henry Gunther (Harvard), Highlands, Mass.
Maloney, Eugene Douglas (UNC), Gastonia, N. C.
Martin, Miles Herbert, Jr. (Duke), Durham, N. C.
Massey, William Joseph, III (Duke), Smithfield, N. C.
Morgan, Calvin Vere, Jr. (Davidson), Johnson City, Tenn.
Morgan, John Garland (Davidson), Spring Hope, N. C.
Moriber, Lloyd Alan (Duke), Brooklyn, N. Y.
Morris, James Culvin, III (Davidson), Anchorage, Ky.
Morrison, Sidney Emmett, Jr. (NCS), Gastonia, N. C.
Nicks, Frank Irvin, Jr. (Colorado), Colorado Springs, Colo.
Norins, Leslie Carl (Johns Hopkins), Baltimore, Md.
Orman, Benjamin Franklin (Rice), Houston, Tex.
Price, William Foster (Davidson), Fayetteville, N. C.
Purcell, Robert Harry (Baylor), Haileyville, Okla.
Ratliff, Norman Burbridge, Jr. (Duke), Lake Worth, Fla.
Riddick, Joseph Henry (Duke), Lynchburg, Va.
Romhilt, Donald Wade (Duke), Terrace Park, Ohio.
Satterfield, Benton Sapp (NCS), Raleigh, N. C.
Schiff, Martin, Jr. (Alfred), New York, N. Y.
Shearin, Willian Arthur (Wake Forrest), Whitakers, N. C.
Sime, David William (Duke), Fair Lawn, N. J.
Stone, Richard Cole (Duke), Durham, N. C.
Stowe, Deryl Grant (Duke), Burlington, N. C.
Strother, William Kemp, III (Wisconsin), Dallas, Tex.
Taylor, Dean Ross (Michigan), Jackson, Mich.
Terry, Lewis Newman, Jr. (Duke), Spartanburg, S. C.
Turner, Harvey Leonard, Jr. (Emory), Thomson, Ga.
Urbaniak, James Randolph (Kentucky), Fairmont, W. Va.
Victor, Martin Ira (Mass. Inst. of Tech.), Durham, N. C.
Waddell, William Bryan (Wake Forest), Galax, Va.
Warden, William Steele (Duke), Melbourne, Fla.

Watson, S. Jimmie (USC), Enoree, S. C.
Weems, Wade Scott (Duke), Waynesboro, Va.
Weiser, Joel James (Adelphi), Bronx, N. J.
Wilkinson, Tolbert Siener (Wake Forest), Wake Forest, N. C.
Williams, Gail Roger (Rochester), Clifton Springs, N. Y.
Woods, Charles Alexander (Davidson), Greensboro, N. C.

THIRD-YEAR CLASS (CLASS OF 1961)

Agre, Fred Alan (Lafayette), Great Neck, N. Y.
Alanis, Joseph Martin (Washington & Lee), Denver, Col.
Atkinson, Samuel Marvin, Jr. (Wofford), Bennettsville, S. C.
Banton, Thomas James, Jr. (Duke), Madison Heights, Va.
Behar, Victor Samuel (Washington & Jefferson), South Orange, N. J.
Brown, John Williamson (Clemson), Newberry, S. C.
Butler, Freddie Clarence, Jr. (Davidson), Roseboro, N. C.
Campbell, Milton Flake (Davidson), Taylorsville, N. C.
Conant, Marcus A. (Duke), Gainesville, Fla.
Constantine, Victor Simon (Duke), Teheran, Iran.
Corwin, Robert Francis (Wake Forest), Dover, N. J.
Cox, Ronnie Lewis (Furman), Greenville, S. C.
Deas, David John (Luke), Canton, N. C.
Dellinger, Clyde James (Duke), Charlotte, N. C.
Dixon, Henry B., II (Duke), Mebane, N. C.
El-Ramey, Thomas Anthony (UNC), Farmville, N. C.
Farris, Robert Linsy (Duke), Charlotte, N. C.
Feagin, John Autrey, Jr. (US Mil. Acad.), San Antonio, Tex.
Feder, Robert Joseph (New York), Brooklyn, N. Y.
Flanagan, Latham, Jr. (Duke), Alexandria, Va.
Gay, William Arthur, Jr. (VMI), Durham, N. C.
Goodwin, Ernest Boyd, Jr. (Citadel), Durham, N. C.
Groff, Diller Baer, III (Haverford), Washington, D. C.
Guynn, Cyrus Harding (Virginia), Portsmouth, Va.
Hall, Warner Leander, Jr. (Davidson), Charlotte, N. C.
Hammond, Charles Bessellieu (Citadel), Athens, Ga.
Harp, James Robert (Duke), Pikeville, Ky.
Harrington, Randall Leon (Duke), Ayden, N. C.
Huneycutt, Harry Carr, Jr. (VMI), Oak Ridge, Tenn.
Jervey, Edward Darrell, II (Virginia), Greenville, S. C.
Johnson, Walter Taylor (Duke), Portsmouth, Va.
Jones, Edward Marshall (Duke), Ashton, S. C.
Jordan, Lyndon Kirkman (Duke), Mt. Olive, N. C.
Kistler, Henry Evans, Jr. (Duke), Charlotte, N. C.
LaPolla, James J. (Duke), Niles, Ohio.
Lassiter, Kenneth Robert Lee (Duke), Richmond, Va.
Lazenby, George William, III (Davidson), Beckley, W. Va.
Levy, Bernard Saul (Mass. Inst. Tech.), Baltimore, Md.
Lybass, Tillinghast Goethe (Duke), Jacksonville, Fla.
Lyon, George Marshall, Jr. (Davidson), Huntington, W. Va.
Martin, Arthur Morrison, Jr. (Davidson), Columbia, S. C.
Massey, Charles Caswell, Jr. (Davidson), Charlotte, N. C.
Matthews, Hubert Irvin (NC State), Cary, N. C.
Mattison, Joel William L. (Princeton Theological Sem.), Arcadia, Fla.
McDonald, William (Emory), Pelham, Ga.
McLain, Lee William (Duke), Sarasota, Fla.
McTammany, John Robert (Duke), Orange Park, Fla.
Merlo, Richard Bartlett (Harvard), Augusta, Ga.
Metz, Earl Nelson (Capital), Columbus, Ohio.
Mullen, Donald Collins (Citadel), Greenville, S. C.
Noyes, Philip Patterson (California), Porterville, Calif.
Nye, Mary Jane Love (Queens), Charlotte, N. C.
Paul, Ronald Ernest (Gettysburg), Pittsburgh, Pa.
Payne, James Franklin (VPI), English, Va.
Peter, Robert Hatton (Duke), Rockville Centre, N. Y.
Pitkethly, David T. (VMI), San Francisco, Calif.
Poole, Ernest Tilghman (NC State), Raleigh, N. C.
Powell, Thomas Edward, III (VMI), Elon College, N. C.
Price, Dudley Randolph (VMI), Stanley, Va.
Richardson, Charles Clifton (Duke), Columbia, S. C.
Rider, Robert Edward (Duke), Greensboro, N. C.
Roberson, Clive Ervin (Florida), Palatka, Fla.
Rockwell, William James Kenneth (Wash. & Lee), Asheville, N. C.
Schmickel, Roy David (Oberlin), Southbury, Conn.
Schwartz, Stephen O. (Columbia), White Plains, N. Y.
Smith, William Siegfried, Jr. (Citadel), Madison, N. C.
Starling, Kenneth Allen (Wash. & Lee), Troy, Ala.
Summerlin, Harry Holler, Jr. (UNC), Laurinburg, N. C.
Sweat, Robert Earle, Jr. (Duke), Mulberry, Fla.
Thompson, Lawrence Keslar, III (Duke), Camp Hill, Penna.
Trant, John Hill, III (VMI), Portsmouth, Va.
Trantham, Harry England (Duke), Brevard, N. C.
Tripp, Gordon Anderson (Harvard), St. Paul, Minn.
Vartanian, Vartan (Cluj, Roumania), São Paulo, Brazil.

Walton, David Sellers (Haverford), Brigantine, N. J.
Warshaw, Joseph Bennett (Florida), Miami, Fla.
Wilemon, William Kelly, Jr. (Wash. & Lee), Booneville, Miss.
Young, Robert Lassiter, Jr. (Duke), Charlotte, N. C.
Yowell, Robert Kluttz (UNC), Raleigh, N. C.

FOURTH-YEAR CLASS (CLASS OF 1960)

Addison, Winnifred Allen (Duke), Toccoa, Ga.
Baker, Linny Marshall (Davidson), Kannapolis, N. C.
Blount, Robert Estes, Jr. (Millsaps), Washington, D. C.
Bradshaw, Preston Hatcher, Jr. (Wake Forest), Rocky Mt., N. C.
Brice, Robert Samuel, Jr. (Duke), Gastonia, N. C.
Brownstein, Burton E. (Washington Square), Brooklyn, N. Y.
Brumley, George W., Jr. (Duke), St. Marys, Ga.
Campell, Henry Simon (Emory), Greenville, S. C.
Cassells, Joseph Samuel (Duke), Chester, S. C.
Chamblee, Hubert Royster, Jr. (Davidson), Raleigh, N. C.
Collins, William Stuart (Davidson), Chase City, Va.
Cooper, William Cornelius, Jr. (Union), Rocky Mt., N. C.
Cousar, George Richard, Jr. (Davidson), Belgian Congo.
Cronce, Paul Calvin (Duke), Frenchtown, N. J.
Crymes, James Elbert, III (Duke), Miami, Fla.
Dalton, Franklin Palmer (VMI), Charlotte, N. C.
Davis, James Karnes (Duke), Rainelle, W. Va.
Denby, John Lambert (Washington), Carlinville, Ill.
Dobbs, Charles Edward (Wash. & Lee), Charleston, W. Va.
Duvoisin, Peter Marc (Duke), Clearwater Beach, Fla.
Dyke, Peter Cummins (Yale), Urbana, Ill.
Ein, Isaac (New York), Durham, N. C.
Eyster, Mary Elaine (Duke), York, Penna.
Fischer, Robert Wallace (Duke), Cincinnati, Ohio.
Fore, William Whately (Duke), Lynchburg, Va.
Fort, Lynn, III (Duke), W. Palm Beach, Fla.
Garcia, Edgardo Arturo (Duke), Hato Rey, Puerto Rico.
Gerber, Edward Michael (Boston Graduate School), Mattapan, Mass.
Goode, George Browne, Jr. (UNC), Hickory, N. C.
Green, Robert (Duke), Palm Beach, Fla.
Grode, Harvey Eliot (Dartmouth), E. Rockaway, N. Y.
Hubbard, William Henry (Florida), Jacksonville, Fla.
Huggin, Perry Jane (Tennessee), Knoxville, Tenn.
LeBauer, Edmund Joseph (Duke), Greensboro, N. C.
Lee, James Fletcher (Tennessee), Murfreesboro, Tenn.
Lewis, Andrew Morris, Jr. (Duke), Cheriton, Va.
Lodmell, John Gary (Duke), Washington, D. C.
Malone, John Hugh, Jr. (Davidson), Charlotte, N. C.
Massie, Francis Stanford (Duke), Waynesville, N. C.
Mayer, Walter Brem, Jr. (Princeton), Charlotte, N. C.
McLeod, Alexander Canaday (Princeton), Southern Pines, N. C.
McLeod, Michael Eugene (Florida), Ft. Pierce, Fla.
Meriney, David Knight (Duke), Ramsey, N. J.
Merrell, Robert Alston, Jr. (Citadel), Daytona Beach, Fla.
Opdyke, John Linford, Jr. (Rollins), Flemington, N. J.
O'Shaughnessy, Patrick Jerome (Utah State), Winona, Minn.
Parkerson, Walter Tuck (Duke), Charlotte, N. C.
Parrott, Lawrence Huitt (Davidson), Charlotte, N. C.
Pearce, Philip Henderson (Furman), Gaffney, S. C.
Pilliod, James Phillips (Yale), Scarsdale, N. Y.
Porro, Robert Siguard (California), Evansville, Ind.
Preston, Edwin Thornton (Duke), Kingsport, Tenn.
Price, Grady Edwin (Duke), Charlotte, N. C.
Reece, Richard Lee (Duke), Oak Ridge, Tenn.
Reed, John Martin (Davidson), Nashville, Tenn.
Riggins, Richard Stafford (Duke), Lake Worth, Fla.
Rineberg, Bernard Allen (Duke), New Brunswick, N. J.
Robertson, Lloyd Harvey, Jr. (Davidson), Salisbury, N. C.
Sadler, John Holland (Duke), Donalds, S. C.
Sandberg, Seymour (Brooklyn), Brooklyn, N. Y.
Scarpelli, Emile Michael (Fordham), New York, N. Y.
Schwarz, George Carl (Duke), Springfield, N. J.
Seabury, James Congdon, Jr. (Virginia), Silver Spring, Md.
Shalit, Allen (Rutgers), Newark, N. J.
Smith, Donald Dewey (Duke), Orlando, Fla.
Smith, Edward Hardin, Jr. (Duke), Clover, S. C.
Stuart, Frank Allan, III (Duke), Tulsa, Okla.
Tully, Harry Thurman, Jr. (Wash. & Lee), Louisville, Ky.
Vause, David Dwight (Duke), Rutherfordton, N. C.
Walker, Joseph Edwards (Guilford), Ellenboro, N. C.
Walker, Lawrence Crumpler, Jr. (UNC), Mt. Airy, N. C.
Weber, Carl Harold, Jr. (Duke), Gastonia, N. C.
Westfall, Harry Lake, Jr. (VMI), Portsmouth, Va.
Weston, William, III (USC), Columbia, S. C.
Woodward, Sue Eggleston (Duke), Suffolk, Va.

Worton, Stanley I (Cornell), Bronx, N. Y.
Young, James Sanford (Wash. & Lee), Washington, D. C.

CLASS OF 1959 WITH INTERNSHIP APPOINTMENTS

Agre, Karl (Great Neck, N. Y.), Bronx Mun., N. Y.
Albertson, Thomas Howard (High Point, N. C.), Duke, Durham, N. C.
Alexander, Clyde Vinson, Jr. (Milan, Tenn.), Duke, Durham, N. C.
Armstrong, Sara Isabel (Greensboro, N. C.), Duke, Durham, N. C.
Baker, Horace Powell, Jr. (Durham, N. C.), Duke, Durham, N. C.
Bean, Richard Louis (Warren, Penna.), Duke, Durham, N. C.
Boineau, John Pope, Jr. (Columbia, S. C.), Georgetown, Washington, D. C.
Bowen, Edward Gene (Lakeland, Fla.), Duke, Durham, N. C.
Brewer, James Chester, Jr. (Guilford, N. C.), Bridgeport, Bridgeport, Conn.
Brooks, David William, Jr. (Atlanta, Ga.), Grady, Atlanta, Ga.
Chandler, Arthur Cecil (Charleston, W. Va.), Duke, Durham, N. C.
Clemmons, Roy Seawell (Greensboro, N. C.), Jackson, Miami, Fla.
Cohen, Leon (Bronx, N. Y.), California, San Francisco, Calif.
Cooper, Tim Ervin (Matthews, N. C.), Charity, New Orleans, La.
Courie, Maurice Nickola (Kinston, N. C.), Univ. Hosp. & Hillman Clinic, Birmingham, Ala.
Engstrom, George Alfred (St. Petersburg, Fla.), Duke, Durham, N. C.
Evans, John Harold (New Orleans, La.), Memorial, Chapel Hill, N. C.
Fischberg, Bruce (Durham, N. C.), St. Elizabeth's, Washington, D. C.
Forline, John William (Durham, Conn.), Grady, Atlanta, Ga.
Freundlich, Irwin M. (Philadelphia, Penna.), Jefferson, Philadelphia, Penna.
Freye, Henry Bernhard (Long Island, N. Y.), San Francisco, San Francisco, Calif.
Gaddy, Robert Edwin, Jr. (Raleigh, N. C.), Duke, Durham, N. C.
Gaskin, John Stover, Jr. (Albemarle, N. C.), Memorial, Chapel Hill, N. C.
Gibbs, Robert Harrison (Statesville, N. C.), N. Y., New York, N. Y.
Gills, James Pitzer, Jr. (Bluefield, W. Va.), Duke, Durham, N. C.
Glover, John Snow (Charlotte, N. C.), Duke, Durham, N. C.
Gregory, Miles Cunningham (Halifax, N. C.), Charity, New Orleans, La.
Gross, Lillian (Brooklyn, N. Y.), Kings County, Brooklyn, N. Y.
Harrison, Howard Courtenay (Durham, N. C.), Duke, Durham, N. C.
Hayes, Charles Patton, Jr. (Durham, N. C.), Duke, Durham, N. C.
Hendry, Wilson Seibert (Perry, Fla.), Duke, Durham, N. C.
Hensler, Patricia Louise (Woodmere, N. Y.), Duke, Durham, N. C.
Higgins, James Thomas, Jr. (Greenville, S. C.), Duke, Durham, N. C.
Hildebrandt, Richard John (Ft. Lauderdale, Fla.), Duke, Durham, N. C.
Hirschfeld, Robert Lewis (Hartford, Conn.), VAH and Univ. Hosp., Oklahoma City, Okla.
Hoffmann, James Russell (West Hartford, Conn.), Georgetown, Washington, D. C.
Jacobs, Daniel Murray, Jr. (Daytona Beach, Fla.), Akron, Akron, Ohio.
Johnson, William Webb (Mt. Holly, N. C.), Duke, Durham, N. C.
Kenan, Patrick Dan (Durham, N. C.), Watts, Durham, N. C.
Kohn, Ben (New York, N. Y.), Los Angeles County, Los Angeles, Calif.
Kuhns, James Gregory (Harlan, Kentucky), Grady, Atlanta, Ga.
Lane, John Haden (Altavista, Va.), Med. Coll., Va., Richmond, Va.
Lindquist, Richard Kurt (Durham, N. C.), Henry Ford, Detroit, Mich.
Litch, Melvin (Greensboro, N. C.), Duke, Durham, N. C.
Mahaley, Moses Stephen, Jr. (Durham, N. C.), Duke, Durham, N. C.
Maron, Hermann Fredriech (Mullins, S. C.), Martins, Mullins, S. C.
Mauney, Frank Maxton, Jr. (Gastonia, N. C.), Duke, Durham, N. C.
McCutcheon, Ernest Parrish (St. Petersburg, Fla.), Grady, Atlanta, Ga.
McFalls, Frederick Dunham (Greensboro, N. C.), Cone Memorial, Greensboro, N. C.
Moles, Stanley Sylvester (Charleston, W. Virginia), J. Hillis Miller, Gainesville, Fla.
Moore, Marcus McDuffie (Daytona Beach, Fla.), Duke, Durham, N. C.
Morgenstern, Alan Lawrence (Brooklyn, N. Y.), Duke, Durham, N. C.
Myers, Alonzo Harrison, Jr. (Charlotte, N. C.), Virginia, Charlottesville, Va.
Nance, Charles Lee, Jr. (Charlotte, N. C.), Med. Coll., Va., Richmond, Va.
Nesmith, Marsh Arthur, Jr. (Plant City, Fla.), J. Hillis Miller, Gainesville, Fla.
Norton, Barry Parker (Mt. Dora, Fla.), Duke, Durham, N. C.
Nowlin, John Burton (Charlotte, N. C.), Union, Baltimore, Md.
Pence, James Jerome, Jr. (Wagram, N. C.), Geisinger, Danville, Penna.
Reed, George Benson, Jr. (Watsonville, Calif.), Penna. Hosp., Philadelphia, Penna.
Rippy, William David (Greenville, S. C.), Mass. Memorial, Boston, Mass.
Robbins, Thomas Waters, Jr. (Princeton, N. J.), Jefferson, Boston, Mass.
Rooker, Donald White (Rocky Mt., N. C.), Med. Coll. of Va., Richmond, Va.
Small, Melvin David (Chestnut Hill, Mass.), Georgetown, Washington, D. C.
Starr, Wilson Clayton (Huntington, W. Va.), N. Y. Bellevue, New York, N. Y.
Tabari, Kambuzia (Tehran, Iran), Duke, Durham, N. C.
Thompson, Frank Brown (Miami, Fla.), Kaiser Foundation, San Francisco, Calif.
Tindall, John Philip (Kissimmee, Fla.), D. C. General, Washington, D. C.
Tope, Stephen Lindsey, Jr. (Tampa, Fla.), Grady, Atlanta, Ga.
Tweed, Clyde Gilbert (Swannanoa, N. C.), J. Hillis Miller, Gainesville, Fla.
Vieth, Roger Gordon (Durham, N. C.), Duke, Durham, N. C.
Wallace, Andrew Grover (Columbus, Ohio), Duke, Durham, N. C.
Wallace, Donald Kai (Durham, N. C.), Duke, Durham, N. C.
Whatley, Joseph William, Jr. (Durham, N. C.), Rex, Raleigh, N. C.
White, James File (Columbia, S. C.), Iowa State, Iowa City, Iowa.
White, Thomas Hugh, Jr. (Durham, N. C.), Duke, Durham, N. C.
Wilkinson Harold Arthur (Wake Forest, N. C.), Duke, Durham, N. C.
Williams, McKim (Baltimore, Md.), Va. Mason, Seattle, Wash.
Wood, Roy Stanley (Durham, N. C.), Duke, Durham, N. C.

Yongue, Alfred Harris (Franklin, Ky.), St. Thomas, Nashville, Tenn.
Young, David Michael, Bluffton, Ind.), Duke, Durham, N. C.

SUMMARY

(At beginning of Autumn Term, September 14, 1959)

MEDICAL STUDENTS

	Men	*Women*	*Special*	*Total*
First-Year	77	1		78
Second-Year	77	1		78
Third-Year	76	1		77
Fourth-Year	76	3		79
	306	6		312

Total Graduates 1932-1959 = 1,818

PARAMEDICAL STUDENTS

School of Nursing		285	**22**	307
Dietetic Interns		7		7
Medical Technology Students		3		3
Physical Therapy Students	5	17		22
Graduate Medicine	269	11		280
Hospital Administration	7			7
Anesthesiology		6		**6**
X-ray Technology	4	6		**10**
Pharmacy Interns		2		2
Record Library Science	0	**0**		**0**
	285	337	**22**	**644**

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BULLETIN
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The School of Nursing

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Annual Bulletins

For Bulletin of Information for Prospective Students, apply to *The Registrar,* Duke University, Durham, N. C.

For Bulletin of Undergraduate Instruction, apply to *The Registrar,* Duke University, Durham, N. C.

For Bulletin of The College of Engineering, apply to *The Registrar,* Duke University, Durham, N. C.

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OF

DUKE UNIVERSITY

THE SCHOOL OF NURSING

1960-61

DURHAM, NORTH CAROLINA
1960

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Calendar of the School of Nursing

Summer Term of the School of Nursing

1960

May	30	Monday. Clinical courses for Summer term begin for pre-registered Junior and Special students in School of Nursing.
June	10	Friday. Last day for registration in Summer Session courses.
June	11	Saturday. Instruction begins in all courses scheduled for first term of Summer Session.
July	4	Monday. No Summer Session classes meet.
July	14, 15	Thursday, Friday. Examinations.
July	16	Saturday. Registration for new students, second term of Summer Session courses.
July	18	Monday. Instruction begins in all second term Summer Session courses.
August	6	Saturday. No Summer Session classes meet.
August	19, 20	Friday, Saturday. Examinations.

1960-1961

FALL SEMESTER

September	6	Tuesday. Clinical courses for Juniors and Seniors begin.
September	15	Thursday, 7:30 P.M. Orientation begins for all entering Freshmen and new students with advanced standing.
September	19	Monday. Registration and matriculation of students who have not pre-registered.
September	22	Thursday. Fall semester classes for Freshmen and Sophomores begin and for Juniors in other than clinical courses.
November	5	Saturday. Last day for reporting mid-semester grades.
November	23	Wednesday, 12:30 P.M. Thanksgiving recess begins.
November	28	Monday, 8:00 A.M. All classes are resumed.
December	11	Sunday. Founder's Day.
December	17	Saturday, 12:30 P.M. Christmas recess begins.

1961

January	3	Tuesday, 8:00 A.M. Classes are resumed.
January	14	Saturday, 12:30 P.M. Fall semester classes end.
January	17	Tuesday. Final examinations for semester courses begin.
January	27	Friday. Final examinations end.
January	31	Tuesday. Registration and matriculation of new students.

February	2	Wednesday. Spring semester classes begin.
March	15	Wednesday. Last day for reporting mid-semester grades.
March	25	Saturday, 12:30 P.M. Spring recess begins.
April	4	Tuesday, 8:00 A.M. Classes are resumed.
May	18	Thursday, 5:00 P.M. Spring semester classes end.
May	20	Saturday. Final examinations for semester courses begin.
May	31	Wednesday. Final examinations for semester courses end.
June	3	Saturday. Commencement begins.
June	4	Sunday. Commencement Sermon.
June	5	Monday. Graduating Exercises.

Officers of the School for the Year 1960-1961

General Administration

Arthur Hollis Edens, Ph.D., LL.D. *President of the University*	2138 Myrtle Drive
Paul Magnus Gross, Ph.D. *Vice-President in the Division of Education*	3816 Dover Road
Charles Edward Jordan, A.B., LL.D. *Vice-President in the Division of Public Relations*	615 West Campus Drive
Herbert James Herring, M.A., LL.D. *Vice-President in the Division of Student Life*	2010 Myrtle Drive
Marcus Edwin Hobbs, Ph.D. *Dean of the University*	115 Pinecrest Road
Alfred Smith Brower, A.B. *Treasurer*	614 West Campus Drive
Gerhard Chester Henricksen, M.A., C.P.A. *Business Manager and Comptroller*	216 Forest Wood Drive
John Marion Dozier, A.B. *Secretary of the University*	2510 Wrightwood Avenue

School of Nursing Administration

Ann Madeline Jacobansky, R.N., M.Ed. *Dean of the School of Nursing*	880 Louise Circle
Edith P. Brocker, R.N., M.A. *Assistant Dean of the School of Nursing* *Director, Division of Community and Public Health Nursing*	1326 Welcome Circle
Thelma Ingles, R.N., M.A. *Director, Graduate Curriculum*	118 Newell Street
Faye Spring, R.N., M.S. *Director, Division of Psychiatric Nursing*	2612 Roxboro Road
Rose Forgione, R.N., M.A. *Acting Director, Division Maternal and Child Nursing*	Westover Park Apartments

Committee on Health Affairs

W. C. Davison, *James B. Duke Professor of Pediatrics, Dean of the School of Medicine and Chairman of the Committee on Health Affairs.*

Ann M. Jacobansky, *Professor of Nursing, Dean of the School of Nursing.*

Charles Frenzel, *Associate Professor of Hospital Administration and Superintendent of Duke Hospital.*

Edith Perryman Brocker, *Associate Professor of Nursing, Assistant Dean of the School of Nursing.*

E. W. Busse, *Professor of Psychiatry.*

Bayard Carter, *Professor of Obstetrics and Gynecology.*

Lelia R. Clark, *Professor of Nursing Service.*

Norman F. Conant, *Professor of Microbiology.*

W. D. Forbus, *Professor of Pathology.*

F. G. Hall, *Professor of Physiology and Pharmacology.*

Philip Handler, *Professor of Biochemistry.*

Jerome S. Harris, *Professor of Pediatrics.*

Deryl Hart, *Professor of Surgery.*

Thelma Ingles, *Associate Professor, Director of Graduate Curriculum.*

J. E. Markee, *James B. Duke Professor of Anatomy.*

W. P. J. Peete, *Assistant Professor of Surgery, Assistant to the Dean of the School of Medicine.*

R. J. Reeves, *Professor of Radiology.*

E. A. Stead, Jr., *Florence McAlister Professor of Medicine.*

Four other members of the faculty holding the rank of Assistant Professor or above, by alphabetical rotation.

Instructional Staff

Faculty

Edith Brocker, R.N., M.A. *Associate Professor of Nursing*	1326 Welcome Circle
*Emily Campbell, R.N., B.S.N.E. *Instructor in Nursing*	Ryan Road
Elinor Caddell, R.N., M.S.N. *Instructor in Nursing*	28 Louise Circle
Joyce Crane, R.N., M.S.N., *Instructor in Nursing*	2010 Chapel Hill Road
JoAnne B. Dalton, R.N., M.S.N. *Instructor in Nursing*	Brown Avenue
Rose Forgione, R.N., M.A. *Assistant Professor of Nursing*	Westover Park Apartments
Elaine Gleason, R.N., M.S.N. *Instructor in Nursing*	804 Louise Circle
Dorothy Grant, R.N., C.M.W., M.S.N. *Assistant Professor of Nursing*	106 Buchanan Blvd.
Clyde Hogsed, R.N., M.A. *Assistant Professor of Nursing*	Dogwood Acres, Chapel Hill
Carol Hogue, R.N., M.S.N. *Instructor in Nursing*	3504 East Oak Drive
Thelma Ingles, R.N., M.A. *Associate Professor of Nursing*	118 Newell Street
Ann M. Jacobansky, R.N., MEd. *Professor of Nursing*	880 Louise Circle
Ella McColl, R.N., M.S. *Instructor in Nursing*	101 West Club Blvd.
JoAnne Mitchell, R.N., M.S.N. *Instructor in Nursing*	101 Newell Street
Carol Mitcham, R.N., B.S.P.H.N. *Instructor in Nursing*	25 Rogerson Drive, Chapel Hill
Faye Spring, R.N., M.S. *Assistant Professor of Nursing*	2612 Roxboro Road
Rebecca Swindell, R.N., M.A. *Assistant Professor of Nursing*	Y-4 Country Club Homes, Raleigh
Betty Van Huben, R.N., M.S. *Assistant Professor of Nursing*	2612 Roxboro Road
Elizabeth Watling, R.N., M.A. *Instructor in Nursing*	Emilie Apts. #3
Ruby Wilson, R.N., M.S.N. *Assistant Professor of Nursing*	2010 Chapel Hill Road
Helen Young, R.N., M.S. *Assistant Professor of Nursing*	University Apartments

INSTRUCTIONAL ASSISTANTS

Grace Bullock, R.N., B.S.N.
Katherine Couch, R.N., B.S.N.
Ollie Davenport, R.N., B.S.N.
Martha Erbach, R.N., B.S.N.
Patricia Harlan, R.N., B.S.N.
Gretchen Lilly, R.N., B.S.N.
Margaret MacNicol, R.N., B.S.N.
*Ruth Proctor, R.N., B.S.N.
Cynthia Raught, R.N., B.S.N.
Gloria White, R.N., B.S.N.

PART-TIME INSTRUCTIONAL STAFF

Jane Agner, R.N., B.S.N.
Instructor, Pediatric Affiliate Program

Lelia Clark, R.N., M.A.
Director of Nursing Service
Professor of Nursing Service

Ruth Hanrihan, B.S.
Staff Dietitian

Laura Harbison, R.N., B.S.N.
Instructor, Premature Infant Program
N. C. State Board of Health

Betty Sue Johnson, R.N., M.S.
Assistant Director, Psychiatric Nursing Service

Helen McLachlan
Associate Professor of Dietetics

Margaret Mitchell, R.N., B.S.N.E.
Assistant Director of Nursing Service

* (Leave of Absence for Advanced Study—September 1, 1959 - August 31, 1960)

DUKE HOSPITAL NURSING SERVICE ADMINISTRATION

Jane Bailey, R.N.
Supervisor, Night Nursing Service

Marion Batchelder, R.N.
Supervisor, Operating Room

Geraldine Bodie, R.N., A.B., B.S.N.
Supervisor, Medical Nursing Service

Gretchen J. Cheek, R.N.
Supervisor, Central Supply Service

Lelia Clark, R. N., M.A.
Director, Nursing Service
Professor of Nursing Service

Martha Covington, R.N., B.S.N.
Head Nurse, INU

Mary C. Davison, R.N.
Head Nurse, Recovery Room

Gertrude Elliott, R.N.
Supervisor, Obstetric-Gynecology Nursing Service

Pauline Hooks, R.N., B.S.N.
Head Nurse, Sims-Williams Ward

Sara Jeffreys, R.N.
Supervisor, Surgical Nursing Service

Eleanor Jenkins, R.N.
Head Nurse, Long Ward

Betty Sue Johnson, R.N., M.S.
Assistant Director of Nursing Service
In Charge of Psychiatric Nursing

Bess Jones, R.N.
Head Nurse, Newborn Nurseries

Lillian Mason, R.N.
Head Nurse, Holmes Ward

Mary McColm, R.N., M.S.P.H.N.
Supervisor, Out-Patient Department Nursing Service

Pearlene McJunkin, R.N.
Head Nurse, Central Supply Service

Margaret Mitchell, R.N., B.S.N.E.
Assistant Director of Nursing Service
Instructor in Nursing

Audrey Morgan, R.N., B.S.
Head Nurse, Minot Ward

Kirstine Neilsen, R.N.
Supervisor, Evening Nursing Service

Marjorie O'Rourke, R.N., A.B., M.N.
Supervisor, Surgical Nursing Service

Onzelle Riley, R.N.
Head Nurse, Delivery Room

Emily Roland, R.N.
Supervisor, Night Nursing Service

Doris Salmon, R.N., B.S.
Head Nurse, Meyer Ward

Vivian Shaw, R.N.
Head Nurse, Nott Ward

Mildred Sherwood, R.N.
Supervisor, Pediatric Nursing Service

Mary Steele, R.N.
Head Nurse, Howland Ward

Verna Stitch, R.N., B.S.N.E.
Supervisor, Evening Nursing Service

Eilene Sullivan, R.N., B.S.
Head Nurse, Cabell Ward

Nancy Taylor, R.N.
Head Nurse, Reed Ward

Eleanora Torrence, R.N.
Head Nurse, Matas Ward

Joyce Tucker, R.N.
Head Nurse, McDowell Ward

Mary Nell Tulley, R.N., B.S.N.E.
Head Nurse, Osler Ward

Elsie M. Vaughan, R.N.
Supervisor, Night Nursing Service

Patricia Walsh, R.N.
Head Nurse, Cushing Ward

Myrtle Whitaker, R.N.
Head Nurse, Hanes Ward

Staff

Myrtle Anderson, A.B. *Librarian*	309 Elizabeth Street
Helen Knoll *House Counselor, Hanes House Annex*	Hanes House Annex
Esther A. Mecca *Secretary to the Faculty*	2505 Cascadilla Street
Marion W. Moore *Secretary to the Dean*	2718 Highland Ave.
Muriel Schumacher *Supervisor of Student Health*	#6 Sylvan Road
Carolyn Thompson *Assistant House Counselor, Hanes House*	Hanes House
Wilhelmena Webb *Secretary*	428 Carolina Circle
Esther M. Weller *Recorder*	Hildgrand Circle
Dorothy Wilkinson *House Counselor, Hanes House*	Hanes House
Lorene Williford *Secretary*	805 W. Club Blvd.

Nursing School Council

Chairman: Dean Ann M. Jacobansky.
Assistant Dean: Edith P. Brocker.
Professor of Nursing Service: Lelia Clark.
School of Nursing Faculty: Faye Spring, Thelma Ingles, Rose Forgione.
Department of Sociology: Dr. John McKinney.
Department of Education: W. S. Gehman.
Preclinical Department, School of Medicine: D. T. Smith.
Clinical Department, School of Medicine: Dr. W. C. Sealy.
Ex-Officio: Dean A. K. Manchester.

Executive Committee of the School of Nursing

Chairman: Dean Ann M. Jacobansky.
Director, Division of Medical and Surgical Nursing: Thelma Ingles.
Director, Division of Psychiatric Nursing: Faye Spring.
Acting Director, Division of Maternal and Child Nursing: Rose Forgione.
Director of Public Health and Community Nursing: Edith Brocker

Faculty Committees

Admissions: Jacobansky, Brocker, Hogue, McColl, Mitchell, Wilkinson, Weller—Secretary

Curriculum: Brocker, Swindell, Van Huben, Watling, Wilson

Library: Young, Anderson, Boyd (student), Brown (student), Dalton, Grant, Harlan

Student Promotions and Student Welfare: Brocker, Gleason, Hogsed, Schumacher, Spring, Wilkinson

General Information

The School of Nursing offers a four-year baccalaureate program. The students who fulfill the requirements of this program earn the Bachelor of Science Degree and are eligible to take the licensing State Board Examinations given by the N. C. Board of Nurse Registration and Nursing Education for the title of Registered Nurse.

The School of Nursing functions within the philosophy of Duke University. This philosophy is epitomized by its moto, *Erudito et Religio,* which "reflects a fundamental faith in the union of knowledge and religion, the advancement of learning, the defense of scholarship, the love of freedom and truth, a spirit of tolerance, and a rendering of the greatest service to the individual, the state, the nation and the church. Through changing generations of students, the objective has been to encourage each individual to achieve to the extent of his capacities an understanding and appreciation of the world in which he lives, his relationship to it, his opportunities, and his responsibilites."

The faculty of the School of Nursing ascribes to the concept that a professional nurse is a person who has acquired the specialized knowledge of Nursing, who has attained abilities useful in practice of Nursing, and who has developed attitudes appropriate to the profession of Nursing.

The faculty of the School of Nursing endeavors to promote a continuous change in the behavior of the students through experiences planned for the acquisition of specific knowledges which include: knowledge of scientific principles basic to Nursing, and knowledge of the tools, techniques, and resources useful in the practice of Nursing, and knowledge of characteristics of the Health and Welfare Institutions.

The faculty of the School of Nursing endeavors to promote a continuous change in the behavior of the students through experiences planned for the attainment of skills which include: the ability to make decisions independently or as group participants, the ability to relate separate phases of patient care to a total plan of patient care, the ability to observe specifics, and to interpret observations for self and others; the ability to work harmoniously and positively with people in ramified and complex situations and organizations.

The faculty of the School of Nursing endeavors to promote a continuous change in the behavior of students through experiences

planned for the development of desirable attitudes which include: a concern for personal enrichment, an appreciation of and respect for individuality, an awareness of their role as citizens, for contributing to their own development and to that of their community and profession.

The School of Nursing offers to carefully selected persons a program based on experiences which are designed in sequential patterns to promote a concatenation of learning and growth. Classes are kept small and close contact with the instructor is encouraged. Whether in the classroom, hospital, laboratories, community, or in the extracurricular activities, the development of the student's physical, mental and social well-being is the primary consideration of the faculty.

Graduates of the program are prepared as professional nurses for beginning positions in nursing and have the competencies and theoretical preparation on which to build further knowledge.

History

The School of Nursing of Duke University was established in association with the School of Medicine and Duke Hospital. The first class of students was admitted in January 1931. In 1953, the School of Nursing was incorporated into the Division of Health Affairs in the University structure. When established, the three year curriculum leading to the Diploma in Nursing was planned to prepare young women to meet community nursing needs; students who completed two years of acceptable college work were awarded a Bachelor of Science degree in Nursing in addition to the Diploma in Nursing. Trends in nursing created a demand for a four year program leading to the degree of Bachelor of Science in Nursing, and in 1953, the University Board of Trustees approved such a program. The Master of Science in Nursing degree was authorized in 1956.

Graduates of Duke University School of Nursing have served their communities in North Carolina and in other states; they have participated in their professional organizations on a national, state and local level. During World War II graduates of this school staffed the 65th General Hospital, the Duke University Medical Unit.

Relationship to the University

As a part of the University community, the School of Nursing serves its students as the focus of a total educational experience that only a major university can provide. It shares the same campus with Trinity College, College of Engineering, the Graduate School of Arts and Sciences, the Divinity School and the Schools of Law, Medicine

and Forestry and Duke Medical Center. The facilities for library, laboratory and field work and the many activities—religious, intellectual, cultural and athletic—form part of the environment which contributes to the nursing student's development. Thus, she may enjoy simultaneously the broad facilities and challenges of a University and the life and atmosphere of a professional school.

Membership and Accreditation

Duke University which incorporates the School of Nursing with all of the other schools of the University is a member of the Association of American Colleges and is accredited by the Southern Association of Colleges and Secondary Schools.

The program leading to the degree Bachelor of Science in Nursing is accredited by the National League for Nursing and the North Carolina Board of Nurse Registration and Nursing Education.

The School is a member of the Department of Baccalaureate and Higher Degree Programs of the National League for Nursing.

Facilities

The facilities for instruction include the facilities available in the undergraduate, professional, and graduate schools and colleges of Duke University and the clinical facilities of Duke Hospital, the North Carolina Cerebral Palsy Hospital and the Durham Health Department.

In a wing of Hanes House are located the administrative offices of the School of Nursing, a large classroom seating 100 persons and equipped with audio-visual aids; a small classroom seating 50 persons and equipped with a screen and movie projector, a nursing arts laboratory with equipment for nursing practice for sixteen students, a conference room for faculty committees, small discussion groups and student council meetings. The School of Nursing also uses the laboratories of the Medical School for courses in science and classrooms in the hospital for clinical nursing courses.

A reference library of 3,900 books and periodicals of special interest to students majoring in nursing is located in Hanes House. Students may use the general libraries on the East and West Campuses and the Duke Hospital Library. A collection of visual aids including films is indexed in the library for the use of students and instructors in the School of Nursing.

Duke Hospital has every modern convenience for the diagnosis, proper nursing care, welfare and comfort of the patients including 640 hospital beds, 30 bassinets, a large public out-patient department,

a large private diagnostic clinic with offices and examining rooms for the doctors who serve on the staff of the hospital. There are very close relationships established between the hospital, the Health Departments and other agencies in North Carolina.

The beds in Duke Hospital are assigned to the various services as follows: Medicine, including dermatology and neurology, has 172; surgery, including urology, otolaryngology, ophthalmology, and orthopaedics, 278; obstetrics and gynecology, 64; and 30 bassinets; psychiatry, 55; and pediatrics, 71. There are 300 beds in private and semi-private rooms included in the figures above: 18 air-conditioned operating rooms, 2 obstetrics delivery rooms. Except for emergencies, all patients are admitted to the hospital from either the out-patient clinic or the private diagnostic clinic. Approximately one-half of the 19,700 patients discharged in the past year were staff patients and the other half private patients.

The hospital has been approved for internships and residencies by the Council on Medical Education and Hospitals of the American Medical Association and is approved by the Joint Commission on Accreditation of Hospitals.

The out-patient department has an average of 435 visits per day. All services including psychiatry carry on an active program in the out-patient departments. Students are assigned to the out-patient department during their program in the School of Nursing.

The Summer Session

The programs in the School of Nursing include courses in the Summer Session each year. Students in the School of Nursing have their courses approved in the School of Nursing and pre-register with the Summer Session office. Students from other colleges and universities who are admitted to the School of Nursing with advanced standing are expected to enroll in the Summer Session to make up deficiencies. Arrangements for registration are made through the office of the Dean of the School of Nursing.

The Summer Session of 1960 will include two terms: Term I, June 10 to July 15, Term II, July 16 to August 20. By attending both terms it is possible for a student to earn as many as twelve semester hours of credit.

While the basic purpose of the Summer Session is to serve the academic and the professional requirements of those who are interested in their own educational advancement, the University recognizes the need of, and provides for, a varied recreation program both athletic and social.

University fees are charged at the rate of $21.50 per semester hour for those admitted with advanced standing. Board at Duke Hospital is $10.00 per week per person, room is $31.50 per person for six weeks term and laundry is approximately $0.50 per week. A bill is sent to all pre-registered students to permit payment in advance.

Awards

THE FLORENCE NIGHTINGALE PLAQUE: The Florence Nightingale plaque is awarded to a graduating student by the Alumnae Association for leadership, scholarship and nursing skill.

THE MOSELEY AWARD: The Moseley Award of $25.00 is given to the student in the senior class who has shown the most skill in Nursing Arts throughout her program in the School of Nursing.

Student Government Association

The purpose of this organization is to regulate all matters pertaining to the life of women of Duke University School of Nursing not under the jurisdiction of the faculty; to increase a sense of individual responsibility; and to cooperate with the faculty in creating and maintaining high ideals for the nurses of the University.

THE HONOR SYSTEM: The purpose of the Honor System is to secure the cooperation of the student body in maintaining honorable conduct in all relations of student, professional and social life. It applies to every student in the School of Nursing. The Honor System is a vital directive force in all phases of each student's life and is a major working part of the Student Government Association.

Santa Filomena

Santa Filomena, the Senior Honorary of the Duke University School of Nursing, was organized in April, 1944, under the sponsorship of the 1943 class. The purpose of this organization is to recognize achievement and promote leadership.

The members are chosen from the rising Senior Class and are publicly tapped by the old members at the first meeting of the SGA in their senior year, the number chosen not exceeding nine or being less than five. Each candidate must show recognized qualities of leadership or must have made some contribution toward the betterment of the School of Nursing. She must have demonstrated superior nursing abilities and her scholastic record must be C or above throughout her first two years.

Santa Filomena strives for better interclass relations, and to promote better nursing and higher nursing standards. The specific objectives are chosen by the members each year. All proceedings of the meetings of this organization are held in secrecy as are all ceremonies except the public tapping of the new members. The Santa Filomena's flower is the white lily and the members wear a small gold Florence Nightingale lamp.

Alumnae Association

The objectives of this Association shall be to cultivate fellowship among its members, to promote the interests of the School of Nursing, and to take its place in the general scheme of Alumni bodies of the University.

The members of the Association strive for the advancement of professional nursing and for the attainment of the aims of the professional organizations.

Admission

CANDIDATES may qualify for admission as members of the freshman class or as students with advanced standing. Since the enrollment is limited, the Committee on Admissions selects students who, in its judgment, are best qualified to benefit from the educational advantages which the school offers. The Committee bases its decision on the academic record of the candidate, on test scores, and on satisfactory evidence of good character and general fitness for college life at Duke. A visit to the campus for a personal interview with members of the faculty is of material benefit to the candidate and the Committee. A non-refundable processing fee of $10.00 must accompany the official application form.

ADMISSION TO THE FRESHMAN CLASS: A candidate for admission to the freshman class must present at least fifteen acceptable units of secondary school credit. A minimum of twelve units in college preparatory subjects must be presented, but it is recommended that fifteen be offered. Subjects classified as college preparatory are English, foreign languages, history and social studies, mathematics (Algebra and Geometry), and sciences.

It is recommended that all candidates for admission to the freshman class take, not later than January of the senior year in high school, the Scholastic Aptitude Test of the College Entrance Examination Board or a similar program of tests administered on the Duke Campus by the Duke University Bureau of Testing and Guidance. Details of the procedure to be followed in applying for either of these testing programs will be sent to each candidate for admission.

Specific Requirements

I. All applicants for admission to the School of Nursing must present at least fifteen acceptable units of secondary school credit. A unit of credit is allowed for a course of study pursued throughout an academic year at an accredited secondary school, if the course has been completed satisfactorily.

1. Twelve units must be in English, foreign language, history and social studies, mathematics, and natural science; and must include:

(a) English—3 units.
(b) Algebra—1 unit.
(c) Plane geometry—1 unit.

2. The three remaining units are elective and may be selected from those subjects for which the school allows credit toward graduation; but it is recommended that they also be selected from the five subject fields listed above.

Other units offered in subjects not included in this list will be considered for acceptance on the basis of full statements transmitted with the applicant's record from the school recommending her.

II. Satisfactory scores on a battery of aptitude tests, either the Scholastic Aptitude Test or the program of tests administered by Duke University.

III. Three recommendations, two of which must come from recent high school or college instructors.

IV. Interviews with two members of the Duke University School of Nursing faculty, whenever possible.

V. Evidence of good health will be requested after the applicant is considered for acceptance. Final acceptance will be contingent on a complete physical examination given at Duke Hospital during the Orientation Period. This examination also includes a chest x-ray, blood and urine studies and skin tests.

ADMISSION TO ADVANCED STANDING IN THE SCHOOL OF NURSING: An applicant for advanced standing must have fulfilled the equivalent of the requirements for admission to the freshman class, must present official certificates of all work completed in other institutions, and must have an honorable dismissal from each institution previously attended. Advanced standing candidates who have previously taken the Scholastic Aptitude Test of the College Entrance Examination Board should request the Board to send a report of their test scores to the Director of Admissions. All others may be advised to take the Scholastic Aptitude Test or the program of tests administered by the Duke University Bureau of Testing and Guidance, as recommended for freshman candidates. Credit for work completed will be determined in relation to the curriculum requirements of the School of Nursing.

Graduate nurses applying for admission to advanced standing are advised to submit records of previous performance in Nursing, as well as results of the NLN Graduate Nurse Qualifying Examination.

Applicants for advanced standing in the School of Nursing should present, as far as possible, subjects corresponding to those required by the School. They may not, during their first semester, register for more than the minimum number of hours required of the class which they enter, except by permission of the Dean of the School of Nursing.

Transfer credits are tentatively evaluated pending the completion of two semesters of work in residence. To validate the total provisional transfer credits the student must earn at least an average of C in a normal load of work. Transfer grades of C or above are rated at two quality points per semester hour when validated. Courses in which grades of less than C have been earned are not acceptable for transfer credit.

The maximum amount of credit acceptable from a junior college is 60 semester hours, exclusive of physical education. No credit is given for work completed by correspondence, and credit for no more than six semester hours is allowed for extension courses. Any extension work accepted must be approved through the dean.

SPECIAL STUDENTS: Graduate Nurses may be admitted for special work in such courses of instruction as they are qualified to take. They may not be admitted as candidates for a degree in a regular course unless they meet all normal requirements for admission.

ADMISSION PROCEDURE: Application for admission should be made to the School of Nursing, Duke University, Durham, North Carolina. Application forms and instructions will be sent to the candidate. It is the responsibility of the candidate to see that these forms are properly executed and, together with other requested material, sent promptly to the Office of Admissions of the School of Nursing.

Application prior to the final year of the secondary school course is not required. Formal steps looking toward admission should be initiated, however, early in the senior year and not later than February 1. Candidates for admission to the School of Nursing normally will receive notification of the decision of the Committee on Admissions by May 1.

READMISSION OF FORMER STUDENTS: A student who, following withdrawal from college, desires to return should apply to the Committee on Admissions. When applying for readmission the student should make a detailed statement of her activities since leaving Duke University.

Financial Information and Living Accommodations

FEES PAID by students cover only a part of the cost of their instruction and of the operation of the University. Income from endowment and contributions from the alumni, alumnae, and other public spirited men and women meet the balance, which constitutes more than half the total cost.

Estimated Expenses

	1st year (2 sems.)	*(1st summer session)*	*2nd year (12 mths.)*	*3rd year (12 mths.)*	*4th year (2 sems.)*
Tuition	$ 850.00		$ 850.00	$ 850.00	$ 850.00
General Fee	150.00		150.00	150.00	150.00
Room Rent	235.00	39.00	325.00	325.00	235.00
Board	450.00	60.00	540.00	540.00	450.00
Laundry (approx.)	20.00	3.00	25.00	25.00	20.00
Books (approx.)	40.00	10.00	40.00	40.00	10.00
Activities (Student Government)	15.00		15.00	15.00	15.00
Uniforms		90.00	10.00		10.00
Travel (approx.)	60.00				15.00
Room Key Deposit	1.00				
	$1,821.00	$202.00	$1,955.00	$1,945.00	$1,755.00

Tuition and Fees

The tuition of $425.00 and the general fee of $75.00 are due and payable not later than the day of registration for a particular semester. After the day of registration no refund of the tuition or the general fee will be made except for involuntary withdrawal to enter the armed services.

Beginning the third year, qualified students may secure additional supervised training by performing services during hospital assignments in patient care. Such students receive awards as scholarships which will be credited to tuition, general fees, room and board.

New students, on notification of acceptance, are required to pay a non-refundable matriculation fee of $20.00 and to make a deposit of $50.00. The $50.00 deposit will not be refunded to accepted applicants

who fail to matriculate. For those who do matriculate, $25.00 of the deposit serves as a continuing room deposit for successive semesters, and the remaining $25.00 as a continuing registration deposit. Arrangements for refund for $25.00 room deposit are described in information furnished each resident student by the Housing Bureau. The $25.00 registration deposit will be refunded to students (1) whom the University does not permit to return, (2) who graduate, or (3) who request the refund at the time of pre-registration, thus indicating their intention not to return for the following semester. The registration deposit will not be refunded to students who pre-register and fail to enter the following semester on schedule.

Students who have been re-admitted to the University after an absence of one or more semesters, on notification of re-admission, are required to make the $50.00 room rent and registration deposit.

Undergraduate students are required to live in the School of Nursing residence houses unless they are married or are living with parents or relatives. Any exception must be approved by the Dean. Rooms are rented for a period of not less than one semester. No refund of room rent will be made to a student who withdraws from the residence halls.

The dining facilities available to students in the School of Nursing include the Medical Center Hospital Cafeteria for upper class students; the Men's Graduate Center and the East Campus Union for freshmen students. Resident students may not board at other than the places specified. The charge for board is payable in equal payments not later than the date of the beginning of each semester and for freshmen, also at the beginning of summer session.

In the regular academic year, students who register for no more than two courses with a maximum credit of 8 semester hours are classified as special students. They are charged a registration fee of $5.00 for each course and $28.50 for each semester hour of course credit. Registration for 9 or more hours or 3 or more courses, requires payment of full fees.

Auditing of one or more courses without charge is allowed students paying full fees, provided that the consent of the instructor is obtained. Students who are enrolled for not less than 3 nor more than 8 semester hours may audit other courses by payment of $10.00 for each course audited. Auditors submit no daily work, take no examinations, and receive no credit for courses audited.

One transcript is issued free of charge. Additional copies are supplied at $1.00 each.

No records are released and no student is considered by the faculty as a candidate for graduation until she has settled with the Treasurer for all indebtedness.

Bills may be sent to parents or guardians provided the Treasurer has been requested in writing to do so. Failure to pay bills on or before the due dates will debar the student from class attendance until the account is settled in full.

Living Accommodations for Students in the School of Nursing

Hanes House and Hanes House Annex are residence houses for School of Nursing students. Freshmen students are assigned to Hanes House Annex. A counselor and her assistants who are members of the Dean's staff live in the respective houses. The counselors, with the cooperation of the Student Council, are responsible for the administration of the houses.

Undergraduate students are required to live in the residence houses unless they are married or are living with parents or relatives. Any exception must be approved by the Dean. Rooms are rented for a period of not less than one semester. No refund of room rent will be made except for involuntary withdrawal to enter the armed services. Such refunds will be made in accordance with the University's established schedule.

The rental charge for a single room is $285.00 for an academic year or $142.50 per semester or $395.00 per twelve-month period. The rental charge for a double room is $470.00 for an academic year or $117.50 per person per semester, or $650.00 per twelve-month period or $162.50 per person per semester. The rental charge for a single room for a six-week summer session term is $48.00; the rental charge for a double room for a six-week summer session term is $78.00 or $39.00 per person.

Regulations governing the occupancy of rooms will be supplied by the Housing Bureau to those students making application for housing. Occupants are expected to abide by these regulations.

Room reservations are made with the Housing Bureau. An applicant who has been officially accepted as a resident student is assigned a room according to an established plan. The initial $25.00 room deposit is effective for the entire college course of the student whose attendance during regular terms is continuous. The deposit will be refunded to resident students under the following conditions: (a) Within thirty (30) days after the student has been graduated, (b) upon student's withdrawal from the University residence halls provided a written notice is received in the Housing Bureau by August 1 for cancellation of reservation for the fall semester and not later than January 15 for cancellation of reservation for the spring

semester, (c) when the reasons requiring withdrawal are beyond the student's control. No refund is made until the occupant has checked out of her room through the Housing Bureau and has settled all her accounts with the Treasurer.

Freshman students are assigned to Hanes House Annex. The Housing Bureau with the assistance of the Orientation Committee selects a roommate for a new student who is assigned to a double room but has made no arrangement for a roommate. After a student has been in residence for one semester, she is responsible for obtaining and keeping a roommate if she continues to occupy a double room. If a student occupying a double room does not obtain a roommate within a period of two weeks she may be required to pay the rental consideration for the whole room.

After a student has engaged a room she is not permitted to move to another without the consent of the Housing Bureau. A student leaving one room and occupying another without permission may be charged for both rooms for the entire semester. No student is allowed to rent or sublet her room to another occupant.

Residence house rooms are reserved by upper-class students in accordance with the plan that is published during the school year. All rooms that have not been reserved on or before the announced date will be considered vacant for the succeeding semester and will be assigned to others.

The rooms are equipped with only the principal articles of furniture. Each student provides her own linens, blankets, bedspreads, and curtains. She may supply additional articles, but large rugs and additional furniture which make cleaning difficult are prohibited.

Scholarships and Loans

SCHOLARSHIPS: Scholarships intended to aid needy and deserving students are awarded annually to students who evidence qualities which give high promise of excellence in Nursing.

Candidates for competitive scholarship prizes should initiate applications during the fall semester of the senior year of study in secondary school. Instructions concerning the specific requirements and deadline dates will accompany the application materials sent to applicants for these awards.

Candidates for remissions of tuition and scholarship grant should submit applications by March 30, of the year prior to the academic year in which assistance is sought.

All candidates for scholarships are required to take the scholastic aptitude test of the College Entrance Examination Board in order to qualify for consideration by the Scholarship Committee. The test

must be taken either in December or January prior to the September in which admission is sought.

11 DUKE UNIVERSITY SCHOOL OF NURSING SCHOLARSHIPS Value: $500.00 to $1,000.00 annually

AWARDS: North Carolina residents—at least four scholarships annually. Out-of-state students—at least five scholarships annually. Two additional scholarships will be awarded annually without reference to geographical area.

ELIGIBILITY: Any student who has been accepted for enrollment to the freshman class of the Duke University School of Nursing in the ensuing academic year is eligible to compete for a scholarship award.

OBJECTIVE: These awards are scholarships based on merit. They are intended to encourage young women who give promise of becoming leaders in the field of nursing. Financial need is not a factor in making the awards. The size of the stipend assigned to each winner, however, will vary to some extent with the financial circumstances of the recipient. The honorary stipend for students needing no assistance will be $500.00 annually, while the stipend may be as large as $1,000.00 for the students who need maximum aid.

BASIS OF AWARD: The Scholarships will be awarded on the following basis.

1. Secondary school scholastic record (candidates will be restricted to the highest quarter of their classes).
2. College aptitude as shown by tests, particularly the scholastic aptitude test of the College Entrance Examination Board.
3. Breadth of interests and native ability as indicated by extracurricular activities.
4. Participation in church, civic, and other organizations with particular reference to the demonstration of qualities of leadership.

DURATION OF AWARD: The award will be made for one year renewable for a second year on the condition that the holder maintain a scholastic average in the top quarter of her class or a "B" average and further that she show evidence of developing the qualities of leadership which served as the basis for the original selection. The maximum duration of the award will be two years.

METHOD OF SELECTION: A Scholarship Committee of Duke University faculty members will select the winners and alternates on the basis of the applications submitted. All applicants will be notified of the decisions in their cases by March 30, 1960.

PROCEDURE: All candidates must meet requirements for admission to Duke University School of Nursing and must submit a Scholarship Application Card to the Office of Admissions, Duke University School of Nursing, Durham, North Carolina before February 1.

GRANTS-IN-AID: Although sufficient funds are not available to assist all applicants who present requests for aid, a number of Scholarship Grants are made each year to able students who need financial assistance in order to meet the cost of attending college. Any candidate for admission, therefore, who considers herself to be in such need is eligible to apply for a Scholarship Grant.

Applicants for Scholarship Grants will be required to submit a detailed statement of financial resources.

The following scholarship funds are available to nursing students who apply for Scholarship Grants:

WALKER P. INMAN MEMORIAL GIFT SCHOLARSHIP FUND

Established May, 1956, by gift of Mrs. Georgia P. Fagan and supplemented by subsequent annual gifts; to be used for scholarship assistance to needy and worthy students seeking the degree of Bachelor of Science in Nursing.

FLORENCE K. WILSON SCHOLARSHIP FUND

Established 1955, by contributions from students of the School of Nursing for the purpose of providing scholarship awards to students in the School of Nursing.

REMISSIONS OF TUITION: Certain students attending Duke University are entitled to a remission of the University tuition charge. Students in one of the privileged groups listed below are entitled to a maximum of eight semesters of free tuition at the undergraduate level. Each Summer Session in which work is taken and each semester spent in another institution will be counted as one of the eight allowable semesters. Only those students enrolled in the regular Nursing School program leading to a Bachelor of Science degree in nursing are entitled to a remission of tuition charge.

Group I: Children of ministers who are members of the North Carolina or Western North Carolina Conferences of the Methodist Church are entitled to remission as are the children of ministers of all faiths residing in Durham County, North Carolina. This consideration is given only to children of resident members of the two North Carolina conferences who are giving their full time to religious work.

Group II: Remissions are given to the children, step-children, and adopted children of Officers, Faculty, and Staff members of Duke University listed in the catalogue in the following categories:

(A) Officers, Officers Emeriti

(B) members of the Faculty who are employed on full-time basis.

* (C) members of the Staff who are employed on a full-time basis.

(D) any deceased Officer, Faculty, Faculty Emeriti, or Staff member, who, at the time of his death, was listed in the catalogue as a full-time employee.

LOANS: A number of loan funds have been established for the benefit of the students of Duke University. In addition to local loan funds, Duke University participates in the student loan program established under the provisions of the National Defense Education Act of 1958. The attractive terms offered to students under the National Defense Education Act offer a practical solution to students who need to defray college costs. The Student Loan Committee, in approving loans, selects those students who, from the standpoint of character, scholastic attainment, personality and degree of financial need, are deserving of consideration. Inquiry should be directed to the Executive Secretary, University Scholarship Committee, Duke University.

The Joseph F. Stein Student Loan Fund is administered by the Dean of the School of Nursing. This fund was established to provide a means of assistance to students to meet pressing financial problems. The amounts to be loaned are limited in size and will not be charged interest rates if paid prior to termination of the program or if the student completes her program. Should a student withdraw from the school before she has completed her program, she will be required to repay the loan in full within six months after her termination with interest computed at the rate of 4% per annum for the entire period of the loan.

* Staff members are defined as follows: (A) Those employees eligible to participate in the Retirement Annuity Plan of Duke University who are, (a) Officers of the University; (b) Full-time members of the faculty with the rank of Instructor or above; (c) Administrative employees with the rank of Director, Manager or above; (d) Professional members of the Library staff whose rank is equivalent to that of Instructor or above; and (e) Full-time members of the Medical School staff of the first four ranks. (B) Emeriti and deceased designations.

General Regulations

Orientation Program

ALL FRESHMEN and transfer students are required to participate in the activities of Orientation Week. The program includes general ability, achievement, and placement tests, orientation lectures, physical examinations, social events, special religious services, registration, and enrollment. New students who miss the whole or a part of the Orientation Program place themselves at a serious disadvantage at the very outset of their college career.

Registration

Students who register in either semester at a date later than that prescribed must pay to the Treasurer a fee of $5.00. They are counted as absent in the work they have missed in the courses to which they are admitted, and these absences carry the same penalty as do other absences from the course. Changes in courses for reasons not arising within the University require a payment of $1.00 for each change made. No course may be elected later than one week after the opening of the semester, and no student may be admitted to any class without an official enrollment.

Health Regulations

Before admission to the School of Nursing, a student is required to have a physical examination by the family physician and to be immunized against typhoid fever, diphtheria, tetanus, smallpox and poliomyelitis. Physical defects, such as defective vision, dental needs, etc., must be corrected before admission.

Before final acceptance, each student is required to pass a physical examination given during Orientation Week. Students whose condition needs further observation may be admitted tentatively, but must cancel their application if later findings prove them physically unfit for nursing.

Medical Care

Students enrolled in a regular program of studies are eligible for the services offered under the health program of the school.

Complete medical facilities are available to students at the Duke Medical Center under the health program. With the necessary exceptions noted below, this type of care is furnished at a minimum expense to regularly enrolled students. The cost is included in the general fee paid each semester.

1. Physical Examination: Upon admission each student receives a complete physical examination including a chest x-ray. Thereafter, the physical examination is repeated annually; the check x-ray semi-annually.

2. Health Office: The health office in Hanes House, under the direction of a physician is maintained for the students in the school. Advice, treatment and examination are available to students during regular hours. Consultation with Duke Medical Center staff specialists are arranged through the health office if necessary. Drugs, dressings, laboratory tests and x-rays are arranged for as needed.

3. Hospitalization: A student requiring hospitalization is admitted to Duke Hospital. Admission is arranged through the health office. Hospital care includes staff nursing, drugs, dressings, laboratory tests and x-rays as needed. Hospital care is limited to thirty days.

If the student is covered by insurance providing hospital, medical or surgical benefits, the coverage shall be applied to the cost of her care.

4. Exceptions: The health program does not cover private duty nursing, refraction of eyes, treatment of teeth, all chronic or pre-existing conditions such diseased tonsils, hernias, pilonidal cysts, chronic skin conditions, endocrine disturbances; elective surgrey, braces or any orthopaedic appliances; accidents or illness occurring during vacations or while off the campus. Blood used for transfusions must be paid for or replaced.

5. Psychiatric Consultation: Advisory consultation with a psychiatrist can be arranged through the Dean of the School of Nursing at no expense to the student. Further psychotherapeutic interviews are not included in the program.

6. Student Health Insurance: This may be secured through the University at a minimal rate. The insurance excludes any coverage for accident or illness cared for under the health program while furnishing insurance protection off the campus and during vacations.

General Academic Regulations

QUANTITY CREDIT AND COURSE LOAD: The term of credit used is the semester hour which signifies one recitation a week throughout the semester. Two or four hours of laboratory work are

equivalent to one hour of class work. Two semesters of seventeen weeks each or three quarters of twelve weeks each constitute the academic year. For the degree of Bachelor of Science in Nursing, credit for 132 semester hours is required.

QUALITY CREDIT: The requirements for the degree are computed in semester hours and in quality points. Quality points are determined by grades as follows: for an A, four quality points for each semester hour; for a B, three quality points for each semester hour; for a C, two quality points for each semester hour; for a D, one quality point for each semester hour; for an F, no quality points. Credit for at least 264 quality points is required for the degree of Bachelor of Science in Nursing.

REQUIREMENTS FOR CONTINUATION IN COLLEGE AND FOR GRADUATION FROM COLLEGE: To continue in college and to graduate, students must, in addition to the requirements listed elsewhere in this Bulletin, pass a minimum number of semester hours, achieve a specified quality point ratio, and in the case of graduation earn a minimum number of quality points. The quality point ratio is calculated by dividing the accumulated number of quality points earned by the accumulated number of semester hours carried (not semester hours passed). These requirements are listed in the following table:

For continuation from	The minimum requirement is
The first to the second year	18 s.h. credit and a q.p.r. of 1.2
The second to the third year	42 s.h. credit and a q.p.r. of 1.4
The third to the fourth year	66 s.h. credit and a q.p.r. of 1.6
The fourth to the fifth year, if needed	90 s.h. credit and a q.p.r. of 1.75

For graduation the minimum requirement is 132 semester hours, 264 quality points and a quality point ratio of 1.9.

In addition to the qualitative standards listed above students must pass a minimum number of hours each semester. Freshmen must pass at least 6 semester hours of work in their first semester and 18 semester hours in their first year; all other students must pass at least 9 semester hours each semester. Junior and senior students are required to have a C average in nursing. The University may require a student whose record is considered unsatisfactory to withdraw, although she has met the minimum requirements set forth in this paragraph.

Reports on proficiency in academic work are sent to parents or guardians after the examinations at the end of each semester. In addition, reports on freshmen are mailed at each mid-semester period.

CLASS STANDING: Students to rank as sophomores must have to their credit at least 26 semester hours and 52 quality points; as

juniors, at least 56 semester hours and 112 quality points; and as seniors, at least 90 semester hours and a quality point ratio of 1.75.

RESIDENCE REQUIREMENTS: A minimum of 30 semester hours of senior-level work in the School of Nursing or colleges of arts and sciences must be earned in residence.

GRADING, ATTENDANCE, AND EXAMINATIONS: Grading: Grades are reported to indicate the following:

(1) Passed. A, B, C, and D are all passing grades. The letters are intended to indicate the following quality of work. A, exceptional; B, superior; C, medium; D, passing.

(2) Failed. A grade of F indicated that the student has failed the course, and in order to receive credit for the course she must repeat the work in class.

(3) Incomplete. (a) A grade of I may be reported by the instructor if for any reason she is unable to report the final grade at the regular time. (b) Incomplete courses must be completed before the close of the succeeding semester; otherwise the I is recorded as F, and the course must be repeated in class if the student is to receive credit for it.

(4) Absent from final examination. (a) The grade X indicates that the student was absent from the regularly scheduled examination. (b) If absence has been excused by the dean the student may take the examination as arranged by the instructor concerned. (c) If absence from the examination is not excused by the dean, the grade for the course concerned is recorded as F. (d) A student with an X grade who has not obtained a passing grade before the end of the semester following that in which the X was incurred is regarded as having failed in the course concerned and must repeat the work in class in order to receive credit.

Attendance

General regulations for all students.

(1) In all nursing courses, students may take a ratio of unexcused non-consecutive absences in the proportion of one absence per semester hour, no more than one third of which may be taken from laboratory hours. However, instructors may specify certain required classes and/or laboratories from which no unexcused absence may be taken; such absences would be considered as execessive, unexcused absences.

(2) Unexcused, consecutive absences, whether excessive or not, result in the loss of quality points as in the case of unexcused, excessive absences.

(3) When the student has incurred twelve absences, excused and unexcused, in any course she is required to drop the course unless the

Dean and the instructor concerned grant special permission for her to continue in the course. (In courses of less than 3 s.h. a student may incur absences not to exceed ¼ of that class hours.)

(4) The first three tardies in a given course are counted as one absence. Therafter, each additional tardy is counted as one additional absence.

(5) All absences taken immediately before and after announced holidays, holiday recesses, and/or vacation result in the loss of two quality points for each absence in each class.

Regulations applicable during the Summer Session:

An undergraduate student who incurs more than three absences in a course, other than a nursing course (whether excused or unexcused) is ordinarily debarred from the course. Should she be permitted to remain in the course, full credit will not be allowed. The amount of reduced credit will be determined by the director of the Summer Session. Days missed through late registration are counted as absences, and three tardies in a given course are counted as one absence.

Regulations for Freshmen and Sophomores:

Each excessive or consecutive absence results in the loss of quality points as follows: one quality point for the first absence, two additional for the second, and three additional for the third. When the third unexcused, excessive or consecutive absence occurs, the student is debarred from the course with a loss of 6 quality points and an "F" in the course.

Regulations for Junior and Senior students with a grade average of 3.0:

Responsibility for punctual and regular class attendance is placed upon Junior and Senior students who, in a normal schedule earn grade average of 3.0 or above in the preceding term. They will be subject to no fixed absence limitations except for the specified required classes and for absences immediately before and after announced holidays, holiday recesses and/or vacations for which the usual consequences will apply. Instructors are expected to refer to the Dean for appropriate action, any student who in their opinion is causing her work or that of the class to suffer because of absences or tardies.

Requirements for Degree

THE SCHOOL OF NURSING offers a program which is planned to cover a period of four years; one academic year, one summer term and three calendar years. At the completion of this program, the student receives the degree of Bachelor of Science in Nursing and is then eligible for the examinations given by the North Carolina State Board of Nurse Examiners.

To fulfill the requirements for the degree of Bachelor of Science in Nursing, a student must complete the program with a C average, must complete 134 semester hours as outlined below, earn 264 quality points, exclusive of Physical Education, and show proficiency in the practice of nursing.

The requirements for the degree of Bachelor of Science in Nursing are based on the principle that the student will derive the maximum benefit if the program includes a broad distribution of studies among representative fields.

For graduation with the degree of Bachelor of Science in Nursing, the following course work or equivalents must be completed.

Uniform Course Requirements	s.h.
Natural and Biological Science	23
Social Sciences	18
English	6
History	6
Religion	6
Elective (Literature, Music, Art Philosophy preferred)	6
Physical Education	2
Major (Nursing and related work)	67
Total	134

These requirements are described in detail below.

ENGLISH, 6 s.h.—This requirement is met by the completion of English 1-2. Students who demonstrate proficiency in English usage may be allowed to substitute 55 or 56 for English 1.

NATURAL AND BIOLOGICAL SCIENCE, 23 s.h.—To satisfy this requirement a student must complete laboratory courses in General Chemistry (3 s.h.), Physiological Chemistry (3 s.h.), Zoology (8 s.h.), Anatomy and Physiology (6 s.h.), and Microbiology (3 s.h.)

RELIGION, 6 s.h.—To meet this requirement 6 semester hours may be chosen from Religion 1-2, 51-52, 55, 65, 71, 85, 93.

SOCIAL SCIENCE AND HISTORY, 24 s.h.—To satisfy this requirement students must take Education 118, Psychology 91 and 116; and Sociology 91, 92 and 150. The remaining 6 s.h. may be selected from History 1, 2 or 51-52 (students who do not present for entrance 2 acceptable units of History must select History) and Political Science 11-12 or 61-62, and Economics 51-52.

LITERATURE, MUSIC, ART, AND PHILOSOPHY, 6 s.h.—This requirement can be satisfied by a total of 6 semester hours in courses in English or American literature, foreign literature courses numbered above 100, literature courses in translation, courses in aesthetics, art, music, and courses in Philosophy (except 48, 103, 104, 109, 199).

PHYSICAL EDUCATION, 2 s.h.—In the School of Nursing, Physical Education is required during the first year and must be completed by the end of the first year.

MAJOR AND RELATED WORK, 67 s.h.—This requirement is met by completing courses in the School of Nursing in accordance with the regulations described.

The work is divided as follows:

FIRST YEAR

English 1-2	English Composition	6 s.h.
History 1, 2	Modern History	6 s.h.
or		
Political Science 11-12	The American System of Government	
Religion 1-2	The English Bible	6 s.h.
or		
Elective	(Music 1-2, Art 1-2 or Philosophy)	
Nursing 1-2	Introduction to Nursing	4 s.h.
Zoology 1-2	Animal Biology, General Zoology	8 s.h.
Microbiology 4	Microbiology	3 s.h.
Chemistry 50	Chemistry	3 s.h.
Psychology 91	Introductory Psychology	3 s.h.
	Physical Education	2 s.h.
		41 s.h.

SECOND YEAR

Anatomy 51	Anatomy	3 s.h.
Physiology 51	Human Physiology	3 s.h.
Chemistry 51	Physiological Chemistry	3 s.h.
Nursing 91-92	General Nursing	13 s.h.
Sociology 91-92	General Sociology	6 s.h.
Nutrition 53	Nutrition and Diet Therapy	3 s.h.
Education 118	Educational Psychology	3 s.h.
Elective	(Art, Philosophy, or Literature)	
or		
Religion	The English Bible	6 s.h.
		40 s.h.

THIRD YEAR

Nursing 120	Pediatric Nursing	6 s.h.
Nursing 130	Obstetric Nursing	6 s.h.
Nursing 140	Applied Nursing	12 s.h.
Sociology 150	Family Relations	3 s.h.
Psychology 116	Psychology of Adjustment	3 s.h.
Nuring 181	Public Health Sciences	3 s.h.
		33 s.h.

FOURTH YEAR

Nursing 160	Social Foundation of Nursing Education	3 s.h.
Nursing 170	Psychiatric Nursing	6 s.h.
Nursing 180	Public Health Nursing	6 s.h.
Nursing 190	Seminar in Nursing	6 s.h.
	Internship	
		21 s.h.

Description of Courses—Degree Program

UNDERGRADUATE COLLEGES

EDUCATION

118. EDUCATIONAL PSYCHOLOGY.—A study of psychology of learning; individual and social development; and psychology of adjustment, as related to problems of instruction and the processes of education. Prerequisite: Psychology 91. 3 s.h. ASSISTANT PROFESSOR PALACIOS; ASSOCIATE PROEFSSORS COLVER AND GEHMAN

ENGLISH

1-2. FRESHMAN COMPOSITION.—Training in composition through the writing of weekly expository themes. The theme subjects derive from assigned reading drawn from British and American literature of the 20th Century. English 1 takes up the Essay, the Short Story, and the Novel; English 2, the Play and the Poem. The student attends each week (1) a general lecture on the reading for the week; (2) a section meeting, where the instructor and the students as a group discuss problems of composition and literature; and (3) an individual conference in which the instructor reads and grades the weekly theme and makes special assignments according to the needs of the student.

33. WRITING LABORATORY.—A non-credit course in elementary composition which may be elected by students who need it, or may be required of certain students.

ENGLISH AND AMERICAN LITERATURE AND LANGUAGE

55, 56. REPRESENTATIVE WRITERS.—The following works are studied in the first semester: Chaucer's Prologue to *The Canterbury Tales* and at least two tales, Shakespeare's *1 Henry IV, Hamlet,* or *King Lear,* and one other play, John Donne's *Poems* (selections), Milton's *Paradise Lost* (selections) and some of the shorter poems; in the second semester: Pope's *Poems* (selections), Fielding's *Joseph Andrews,* Keats' *Poems and Letters,* Arnold's *Selected Poetry and Prose,* Dickens' *Great Expectations,* Joyce's *Portrait of the Artist as a Young Man,* and Eliot's *The Waste Land and Other Poems.* 6 s.h. (E & W) PROFESSOR BEVINGTON AND STAFF

HISTORY

1, 2. MODERN HISTORY.—This course is an introduction to the study of modern history with special reference to the issues in the modern world. Topics selected for emphasis are: the contest between liberty and authority in the modern state; changing economic organization and theory—capitalism and the challenges to it; the problems of peace and war among the states; the changing faith men live and die by. Beginning about 1500 with the rise of the European dynastic states, the story is pursued in the first semester to approximately 1848, and in the second through the two great world wars. The central theme in both semesters is the expansion of the influence of Western Europe throughout the world with some attention to the rise of the United States as a world power. 6 s.h. (W & E)

Sophomores and juniors are not admitted to this course.

PROFESSORS ROPP AND PARKER; ASSOCIATE PROFESSOR FERGUSON; ASSISTANT PROFESSORS HOLLYDAY, SCOTT, TISCHENDORF AND YOUNG; DRS. CRANE AND GILLIN; MESSRS. BERNHARD AND LIMOLI

51, 52. MODERN HISTORY.—An intoductory course for sophomores, juniors and seniors dealing with the topics indicated in the description of course 1, 2. 6 s.h. (W & E) PROFESSORS ACOMB AND FERGUSON; ASSISTANT PROFESSORS HOLLYDAY, SCOTT, TISCHENDORF AND YOUNG; DR. CRANE AND MR. LIMOLI

51X, 52X. MODERN HISTORY.—A special section for seniors who have had no other history at Duke and who wish a course in history before completing their college career. The topics covered will be essentially the same as those indicated in the description of course 1, 2. 6 s.h. (W) PROFESSOR ROPP

PHILOSOPHY

49. ETHICS.—A philosophical consideration of such basic ethical concepts as *right* and *wrong, good* and *evil, freedom* and *duty,* together with a study of some of the major types of ethical theory. 3 s.h. (E & W)

Professors Baylis and Negley; Associate Professor Welsh; Dr. Binkley

POLITICAL SCIENCE

11-12. THE AMERICAN SYSTEM OF GOVERNMENT.—An introductory study of the principles and operation of the American government in the light of the present world position of the United States. (Only open to Freshmen.) 6 s.h. (E & W)

Associate Professor Sindler; Assistant Professor Nelson

[Students completing 11 in the spring semester should take course 62.]

61-62. AMERICAN AND COMPARATIVE POLITICAL SYSTEMS.—An introduction to the theory and practice of modern government. The first semester is devoted to the study of American constitutional democracy. Topics examined include federal-state relations, the separation and interrelationships of the executive, legislative, and judicial branches of government, judicial review, the role of political parties and public opinion the formulation and execution of domestic and foreign policy, civil liberties. The second semester is devoted to a study of constitutional democracy in Great Britain and France with emphasis upon the similarities and differences between those systems and our own. Detailed attention is also given to an examination of the theory and practice of totalitarian dictatorship as exemplified in the U.S.S.R. 6 s.h. (E & W)

Associate Professor Simpson; Assistant Professors Cheek, Gillespie, Havens and Leach

REQUIRED PHYSICAL EDUCATION

Two semester hours to be completed in two semesters are included in the 131 hours required for graduation.

At the beginning of the freshman year, after a series of tests have been given, individual conferences are held and each student is guided into the type of activity she most needs, as determined from the evaluation of the test scores and the results of the conference. This course continues for half of the semester after which all freshmen take fundamental movement and social recreation for the remainder of the semester.

During the second semester every student will elect two activities from those offered by the Department.

Professors Grout, Chairman, Bookhout and Lewis; Associate Professor Holton; Assistant Professors Eddy, Spangler, and Woodyard; Miss Proctor, Mesdames Kistler and Wray

PSYCHOLOGY

91. INTRODUCTORY PSYCHOLOGY.—An introduction to the facts, principles, and problems of normal adult psychology through a study of psychological methods as applied to motivation, emotions, perception, sensation, thinking, memory, learning, individual differences, and personality. 3 s.h. Staff

116. PSYCHOLOGY OF ADJUSTMENT.—The course is planned to give an adequate understanding of problems of adjustment and of mental hygiene. Lectures and discussions cover an application of the principles and findings of normal and abnormal psychology as these relate to the adjustment of the average individual in our changing society; a survey of the principles of mental hygiene; discussions of current socio-cultural trends significant for individual adjustment. 3 s.h. (W)

Associate Professor Reichenberg-Hackett

RELIGION

The uniform course requirement in Religion may be met in one of the following ways:

(a) by completing, in the freshman year, Religion 1-2;
(b) by completing, in the sophomore year or later, Religion 51-52;

(c) by completing, in the sophomore year or later, Religion 55; and one other course selected from those numbered 60-99.

Students who have fulfilled the uniform course requirement in Religion are eligible to elect any course numbered 100 and above, except those for which additional prerequisites are prescribed. (See Undergraduate Bulletin.)

1-2. THE ENGLISH BIBLE.—A comprehensive survey of the books of the Old and New Testaments, which examines their origin in the history of the people of the Bible, and which gives special attention to major persons and events. Students are encourage to evaluate the significance of the Bible, for the individual and for society. Open to freshmen only. 6 s.h. STAFF

51-52. THE ENGLISH BIBLE.—Religion 1-2 adapted to the capabilities of sophomores, juniors, and seniors. Religion 51-52 is not open to freshmen, or to students who have received credit for Religion 1-2. 6 s.h. STAFF

55. THE RELIGION OF THE BIBLE.—An introduction to the historical and critical study of the Old and New Testaments, which considers the principal persons, events, ideas, and practices contained in the Biblical record, and their significance for the present time. Religion 55 is not open to freshmen, nor to students who have received credit for Religion 1-2 or 51-52. 3 s.h.
ASSOCIATE PROFESSOR PRICE, ASSISTANT PROFESSORS BRADLEY AND DANIELS

65. JESUS: THE MAN AND HIS MESSAGE (formerly Religion 114).—The Gospel records will be examined in detail for the purpose of recovering the person and mission of Jesus. Attention will be given to conceptions of Christ in the history of the Church, and to his contemporary significance. Prerequisite: Religion 55. 3 s.h. ASSOCIATE PROFESSORS PHILLIPS, ASSISTANT PROFESSORS SALES AND OSBORN

71. CHRISTIANITY IN THE WESTERN WORLD.—An historical study and evaluation of the major trends, developments, and interpretations of Christianity from New Testament times to the present with emphasis upon their relevance to an understanding of Christianity today. Prerequisite: Religion 55. 3 s.h.
ASSOCIATE PROFESSORS MANSCHRECK, ASSISTANT PROFESSOR DANIELS

85. INTRODUCTION TO CHRISTIAN ETHICS (formerly Religion 91).—A brief analysis of the Biblical and historical foundations which afford a basis for a Christian understanding of man's moral situation is followed by a study of some of the social implications of the Christian religion: marriage, race, the political and economic order, etc. The course considers the relation of Christian ethics to moral philosophy. Prerequisite: Religion 55. 3 s.h. ASSOCIATE PROFESSOR PRICE, ASSISTANT PROFESSOR OSBORN, MR. LANGFORD

93. SURVEY OF THE WORLD'S LIVING RELIGIONS.—A brief study of religion in primitive culture is followed by an examination of the world's living religions in terms of historical development and the beliefs, practices and contemporary significance of each. Prerequisite: Religion 55, or the permission of the instructor. 3 s.h. ASSISTANT PROFESSOR BRADLEY

SOCIOLOGY

91-92. GENERAL SOCIOLOGY.—An introduction to the scientific study of social life; its origin, evolution and organization as illustrated in the study of a number of concrete social problems. 6 s.h. (E & W) STAFF

Soc. 150. The Family. Analysis of the American family as an institutionalized group and its relationship with other institutions and structural features such as social class and ethnic group. Special attention is devoted to methods of research in this area. 3 s.h. (formerly 250) STAFF

ZOOLOGY

1. ANIMAL BIOLOGY.—The principles of biology as applied to animals. 4 s.h. (W & E) ASSISTANT PROFESSOR KLOPFER; ASSISTANT PROFESSOR SANDEEN AND STAFF

2. GENERAL ZOOLOGY.—A brief survey of the animal kingdom. Prerequisite: Zoology 1. 4 s.h. (W & E) Professor Bookhout and Associate Professor Hunter and Staff

SCHOOL OF NURSING

BIOLOGICAL AND PHYSICAL SCIENCE

Anat. 51. ANATOMY.—The student gains an understanding and appreciation of body structure and its relation to normal functions in health and abnormal functions in disease. Audio-visual aids are used extensively and in conjunction with laboratory work the anatomical structures are demonstrated on dissected human specimens. 3 s.h. Professor Markee and Staff

Physio. 51. HUMAN PHYSIOLOGY.—A study of the normal functions of the human body with references to their applications in health and disease. 3 s.h. Professor F. G. Hall and Staff

Chem. 50. CHEMISTRY.—A course in the fundamentals of general inorganic chemistry with particular emphasis on the needs of the student nurse. A brief introduction to organic chemistry. 3 s.h. Professor Taylor

Chem. 51. PHYSIOLOGICAL CHEMISTRY.—This course is designed to aid the student in understanding the chemical mechanism of the human body both in health and in disease. The student also acquires knowledge concerning the chemical basis of diagnosis and therapy. 3 s.h. Professor Taylor

Micro. 4. MICROBIOLOGY.—From the learning experiences included in this course the student is enabled to understand and appreciate her role in the prevention of microbial disease. 3 s.h. Associate Professor Willett

NURSING AND ALLIED ARTS

N1-2. INTRODUCTION TO NURSING.—An introduction to basic human health needs and some of the methods of care to meet them. 4 s.h. Associate Professor Brocker; Assistant Professor Van Huben

Nutr. 53. NUTRITION AND DIET THERAPY.—This course considers the nutritional needs of individuals of varying ages and methods of meeting these needs under different economic and social conditions. Accepted principles of diet therapy are presented on which dietary modifications are based, as well as the practices based on these principles. 3 s.h. Associate Professor McLachlan

N91-92. GENERAL NURSING.—A study of the fundamentals of patient care. The aims of this course are to give the student a basic knowledge of the principles and skills of nursing care. Correlated experiences in patient care are provided. 13 s.h. Professor Stead and Staff; Professor Hart and Staff; Professor Busse and Staff; Associate Professor Ingles; Assistant Professor Campbell; Mesdames Martin, Mitchell and White; Miss Crane

N120. PEDIATRIC NURSING.—This course is designed to help the student understand the growth and development of well children and on this basis, acquire the ability to identify and meet the needs of children with illnesses or handicaps in the hospital and the community. Emphasis is placed on the child as an individual and his relationship to the family and society. 6 s.h. Professor Harris and Staff; Assistant Professor Forgione; Misses Cox and Agner

N130. OBSTETRIC NURSING.—This course focuses on maternal and infant care in the hospital and community. Emphasis is placed on support and guidance to the pregnant family. 6 s.h. Professor Carter and Staff; Assistant Professor Forigone; Misses Mitcham; Mesdames Hogue, Couch

N140. APPLIED MEDICAL-SURGICAL NURSING.—A study of ways by which the principles of nursing care can be modified and adapted to meet the needs of specific patients. Experiences are provided for the student in various selected areas of the hospital and community. 12 s.h. Associate Professor Silverman; Assistant Professor Hogsed; Mesdames Dalton and Erbach; Miss Hanrahan

N160. SOCIAL FOUNDATION OF NURSING EDUCATION.—A survey of major historical, philosophical, and sociological factors which have affected development in Nursing and Nursing Education. The purpose of the course is to give the student a better understanding of the place of nursing in present day society and the responsibilities of the individual nurse toward that society. 3 s.h.
PROFESSOR JACOBANSKY; ASSOCIATE PROFESSOR BROCKER

N170. PSYCHIATRIC NURSING.—Program focuses on dynamic psychiatry and dynamic psychiatric nursing therapy. It includes opportunities for learning under close supervision through experience with one patient at a time. 6 s.h.
PROFESSOR BUSSE AND STAFF; ASSISTANT PROFESSOR SPRING; MRS. BULLOCK, MRS. MCCOLL

N180. PUBLIC HEALTH NURSING.—Study of the philosophy and basic principles of public health nursing concurrent with planned and supervised practice in Durham County Health Department and the Outpatient Department of Duke Medical Center. 6 s.h. ASSOCIATE PROFESSOR BROCKER; ASSISTANT PROFESSOR YOUNG; MISSES HARLAN, WATLING AND BLACK

N181. PUBLIC HEALTH SCIENCES.—This course offers a body of knowledge derived from the field of public health which includes an introduction to such areas as; epidemology, environmental sanitation, bio-statistics and public health administration. 3 s.h. MISS WATLING; VISITING LECTURERS

N190. SEMINAR IN NURSING.—The classes and clinical experiences are designed to consider the more complex nursing problems encountered in Medical-Surgical Nursing. Individual investigation under guidance in a selected area of special interest in Medical-Surgical Nursing and a wrtten report of this study is required. 6 s.h. ASSISTANT PROFESSOR WILSON; MISS DAVENPORT

N215. SEMINAR IN TEACHING.—Intensive study of principles, curriculum and methods in Nursing Education. The class will be limited to 10 students. Prerequisite Bachelor of Science in Nursing. 3 s.h. PROFESSOR JACOBANSKY

INTERNSHIP: The final summer of the Nursing Program is a three-month period designed as an Internship. This is a period of transition, from student status to graduate professional nurse, during which she will be provided with opportunities to observe and participate in leadership roles and nursing administration plans for patient care.

While participating in this internship, the nurse is employed by the Nursing Service of Duke Hospital and paid according to the prevailing salary scale.
PROFESSOR CLARK; MISS MITCHELL

General Regulations Governing Graduate Study

General Information

THE DEGREE of Master of Science is offered in the fields of Medical and Surgical Nursing, Maternal and Infant Health, Pediatric Nursing* and Psychiatric Nursing*. The programs are designed to increase the students' information relative to the area of specialization, promote opportunities for learning through self-directed activities, offer sustained experiences in the care of individual patient, to offer experiences in supervised teaching, and provide opportunities for personal and professional growth and development.

Admission

PREREQUISITES. A student seeking admission to the Graduate Program of the School of Nursing of Duke University must have received a Bachelor of Science Degree in Nursing (or the equivalent) from an accredited institution. The undergraduate program should be well rounded and of such quality as to give positive evidence of capacity for graduate study.

PROCEDURE FOR ALL APPLICANTS. A student seeking admission to the Graduate Program should request from the Admissions office an application blank. This should be filled out completely and returned promptly. In addition to the application form the following supporting documents should be provided: (1) a transcript or transcripts of all undergraduate and graduate work mailed directly by the registrar; (2) three letters of recommendation written by persons best qualified to judge the applicant as a prospective graduate student; (3) scores on the State Board Examination in Nursing and/or Graduate Nurse Qualifying Examination are required.

DEADLINES FOR APPLICATIONS: The application and all supporting documents should be submitted to the Office of Admissions not later than August 1 by those applying for the fall semester; before May 12 for admission to the first term of summer; and before June 18 for admission to the second term. It is the stu-

* Not offered in 1960-61.

dent's responsibility to make certain that her application is complete and in order before the dates specified.

NOTIFICATION AND STATUS. When the application is approved, the student will receive a letter of admission. The process of admission is not complete until a statement of acceptance has been returned.

Applicants who are admitted will be offered full admission or provisional admission. *Provisional admission* is offered to students who (1) appear to warrant admission but who do not fully comply with admission requirements, for a trial period of one semester or a minimum of 12 hours of course work, or (2) are admissible except that the application lacks a letter of recommendation, a supplementary transcript, or required test scores, or some other required information. Graduate credit earned under *provisional status* may be applied toward an advanced degree at Duke University if and when upon review the student is granted full admission.

Registration

WHO MUST REGISTER. (1) All students who enter course work for credit; (2) all students who have completed minimum requirements for an advanced degree, but continue to use the facilities of the University in their research.

REGISTRATION. After the applicant has received notification of admission and has submitted a statement of acceptance of admission, she is eligible for registration. During the registration periods, she confers with the Director of Graduate Program of her major department, who prepares a course card, listing the course work to be taken during the semester.

LATE REGISTRATION. All students are expected to register at the time stated. *Those registering later are subject to a late registration fee of five dollars.*

CHANGE OF REGISTRATION. During the academic year within a period of fourteen days from the specified day of registration, students may change their schedules with the approval of the Director of the Graduate Program.

Grades, Hours, and Credits

Although ideally graduate study is principally individual reading, research, and laboratory experimentation under guidance, academic progress in the United States is generally measured and recorded in

terms of course hours and credits. Peculiar to graduate study is the term *residence,* also generally measured in hours, to designate individual study apart from courses, such as writing a thesis and preparing for general examinations. Since September 1959 in this Graduate School credit for courses and seminars, research, and residence, and corresponding tuition and fees have been stated in terms of UNITS. According to conventional measurement ONE UNIT is equivalent to ONE SEMESTER HOUR. Thus a course previously described as carrying a credit of 3 s.h. now carries a credit of 3 units.

GRADES. Grades in the Graduate Program are as follows: *E, G, S, F,* and *I. E* (exceptional) is the highest mark. *G* (good) and *S* (satisfactory) are the remaining passing marks. *F* (failing) is below passing, and *I* (incomplete) indicates that some portion of the student's work is lacking, for a satisfactory reason, at the time the grades are reported. The instructor who gives an *I* for a course specifies the date by which the student must have made up the deficiency. In no case may an extension be granted beyond one calendar year from the date the course ended. If the course is not completed, a statement of *No Credit* is made upon the student's record.

COURSES PRIMARILY FOR UNDERGRADUATES. Students granted provisional admission may on occasion be required as part of their program to take undergraduate courses as prerequisites to continued graduate study. Undergraduate courses thus taken and others elected by the student will carry no graduate credit.

In exceptional cases, 100-level courses *outside the major department* may be taken for graduate credit to a maximum of two one-semester courses or one year-course not exceeding a total of 8 units, when approved by the Director of the Graduate Program in the major department and in the department in which the course is listed.

NORMAL PROGRAMS. Normally graduate students who do not carry teaching or assisting duties carry a full load of graduate work until the requirements of the degree are met. A full load is 16 units a semester or 32 units for the academic year. Six units is a maximum load for one term of the Summer Session.

WITHDRAWAL AND INTERRUPTION OF PROGRAM

From a Course. After 14 days from the date of registration students may drop courses only with the approval of the Director of the Graduate Program, the instructor of the course to be dropped, and the Dean of the School of Nursing the course is dropped without the necessary approval, the permanent record will list the course as *Dropped Unofficially, F.* If a course is dropped 30 days or more after the beginning of the class for the semester involved, the status of the student at the time of withdrawal from the course will be determined

and be indicated by the designation *Withdrew Passing* (W.P) or *Withdrew Failing* (W.F.).

From the School. The University reserves the right, and matriculation by the student is a concession of this right, to ask the withdrawal of any student whose conduct at any time is not satisfactory to the University, even though no specific charge be made against the student. If a student wishes for any reason to withdraw from the School she should notify both the Director of the Graduate Program and the Dean of the School prior to the date of her expected withdrawal.

Students who find it necessary to interrupt their program of study for a period longer than a summer vacation should, before departure, provide in writing a statement of the reason for interruption, mailing address, and expected date of return.

TRANSCRIPT. A student who wishes to transfer his credits from Duke University to another institution is entitled to one free transcript of his record. A fee of one dollar, payable in advance, is charged for each additional copy. Requests are directed to the Records Office.

Master of Science in Nursing

RESIDENCE REQUIREMENTS. Candidates for Master's degree must spend, as a minimum, one full year at Duke University. Often more time will prove necessary depending upon the nature of the student's research problem.

A Master's degree requires a minimum of 42 units of graduate credit; not less than 27 units must be in Nursing courses or seminar work.

A Master's candidate who presents a thesis when not registered in residence will be charged 3 units of residence for the semester or term in which the thesis is presented.

CANDIDACY FOR THE MASTER'S DEGREE. To be considered as a candidate for a Master's degree the graduate student must (1) have made passing grades in all courses taken during the first period of residence (if she registers for fewer than 12 units of graduate courses during her first period of residence she must make passing grades on the initial 12 units of graduate courses), (2) have made a grade of *G* or *E* on at least 3 units of this work, and (3) have received the approval of the major department.

TRANSFER OF GRADUATE CREDITS. Under certain circumstances a maximum credit of 6 units may be allowed for graduate courses completed elsewhere. The acceptance of credit up to this amount, however, will not reduce the minimum period of full-time registered residence at Duke University.

TIME LIMITS FOR COMPLETION OF MASTER'S DEGREES. The candidate for the Master's degree who is in residence for consecutive academic years should complete all requirements for the degree within two calendar years from the date of her first registration in the Graduate Program. Any candidate must complete all requirements within six calendar years of her first registration.

Credits earned over a longer period of time cannot be credited toward a degree.

MAJOR AND MINOR SUBJECT. In her graduate work the student must present acceptable grades for a minimum of 42 units of graduate courses. Of these, at least 27 units must be in the major subject. The student must take a minimum of 9 units in the minor subject (education) which are approved by her major department.

3 units must be taken in research, and the 3 remaining units may be taken in another department.

Financial Regulations

GENERAL FEES IN THE ACADEMIC YEAR. The following tables shows the general fees and changes collected from all students. All fees for each semester are due and payable, unless otherwise specified, at the time of registration for that semester. No student is admitted to classes until arrangements have been made with the Treasurer of the University for the settlement of fees.

Tuition per semester	$425.00
General fee* per semester	$ 75.00
Summer Session (two terms 12 units)	$342.00

Tuition and fees for a full semester program of 16 units amount to $500.00. For a part program, tuition and fees are computed at the rate of $32.50 per unit.

WITHDRAWAL FROM A COURSE OR FROM THE GRADUATE SCHOOL. Arrangements made with the Treasurer to prorate tuition and fees due do not imply that the full amount is not due and payable. A student who after 14 days after the date of registration withdraws from a course or from the Graduate School is liable for payment of full tuition fees and room rent.

LIVING ACCOMMODATIONS:

Graduate students in the School of Nursing may occupy rooms in the School of Nursing residence. The rental charge for a single room is $395.00 for the 12 month period. The rental charge for a double room is $325 for each occupant. Rooms are rented for a period of not less than one semester unless special arrangements are made through the Housing Bureau. Room reservations are made through the Housing Bureau after official acceptance for admission to the University. Students may arrange for apartments or rooms in private homes in the city. The Housing Bureau of the University maintains a file of rooms and apartments listed with it for rental. Students may use this file as an aid to locating suitable living accommodations.

DINING SERVICE. Food service on both the Woman's College Campus and the West Campus is cafeteria style. The cost of meals approximates $1.75 to $2.25 per day, depending upon the need and taste of the individual. The dining facilities on the West Campus include three cafeterias with multiple-choice menus, a grill, and, in

* General fees, in lieu of most special charges, include the following fees: Matriculation, Athletic, Medical, Library, Damage, Commencement, Diploma, and an average of the Laboratory and Materials fees. Expenses for field trips are not included.

addition, the Oak Room where full meals and a la carte items are served. The Men's Graduate Center has a cafeteria open at meal hours, and a coffee lounge which is open until 11:00 P.M. The prices are the same as in the West Campus Union. Because of the large number of those served in the dining halls, it is not possible to arrange special diets for individual students.

MEDICAL CARE. The complete medical facilities of the Duke University Medical Center are available to all members of the University community. To secure the benefits of the Student Health program, a graduate student during the term or semester in which the illness occurs must 1) in the Summer Session term be registered for at least 3 units, 2) prior to completing minimum residence requirements be registered for at least 9 units per semester. Students are not covered during vacations and their dependents and members of their family are not covered at any time. Care is provided at the Health Office in Hanes House.

The service provided includes hospitalization in Duke Hospital, when recommended by the Hospital staff, to a limit of thirty days; medical and surgical care under the supervision of a senior physician or surgeon; drugs, X-ray work, and ward nursing. Students pay for board while in the hospital. Excluded from the service are refraction of eyes, treatment of teeth ,and of all chronic and pre-existing conditions, and elective surgery.

Graduate students are urged to carry adequate health insurance to supplement Student Health Program services. If students have insurance providing hospitalization, surgical, or medical benefits, the benefit shall be applied to the cost of their medical care.

MOTOR VEHICLES. Every motor vehicle operated on the campus by students enrolled in Duke University must be registered at 07 Allen Building within five days after arrival and thereafter must display the proper decal emblem. To register a vehicle, the student should present the following documents: (1) state vehicle registration, (2) state operator's license, (3) evidence of automobile liability insurance as required by North Carolina law ($5,000 per person, $10,000 per accident for personal injuries; $5,000 for property damage).

STUDENT ACTIVITIES. Graduate students new to Duke University may be reminded that they are welcomed to use such recreation facilities as swimming pools, tennis courts, golf course, and to affiliate with choral, drama, and religious groups. They may become junior members of the American Association of University Professors.

BUREAU OF TESTING AND GUIDANCE. The University maintains a Bureau of Testing and Guidance which provides a cen-

tralized program of educational, vocational, and personal counseling for students. In addition, the Bureau administers special group testing programs for University schools and departments and serves as the local testing center for a wide variety of national testing programs. The Bureau also carries on programs of research in the field of measurement and counseling.

Program on Medical-Surgical Nursing

Fall Semester

N201	Advanced Medical and Surgical Nursing	8 units
N203	Thesis Seminar in Patient Care	2 units
N205	Seminar in Psychophysiological and Interpersonal Aspects of Nursing	2 units
Soc. 290	Methods in Sociological Research	3 units
		15 units

Spring Semester

N202	Advanced Medical and Surgical Nursing	8 units
N204	Thesis Seminar in Patient Care	3 units
N206	Seminar in Psychophysiological and Interpersonal Aspects of Nursing	2 units
N207	Seminar in Nursing Research	2 units
		15 units

Summer Session

	Electives	12 units

Program on Maternal and Infant Health

Fall Semester

N209	Maternal and Infant Health	6 units
N211	Thesis Seminar in Patient Care	2 units
N205	Seminar in Psychophysiological and Interpersonal Aspects of Nursing	2 units
Soc. 290	Methods in Sociological Research	3 units
	Electives	3 units
		16 units

Spring Semester

N210	Maternal and Infant Health	6 units
N212	Thesis Seminar in Patient Care	3 units
N206	Seminar in Psychophysiological and Interpersonal Aspects of Nursing	2 units
N207	Seminar in Nursing Research	2 units
	Electives	3 units
		16 units

Summer Session

N213	Field Work in Maternal and Infant Health	4 units
	Electives	6 units

N201-202. ADVANCED MEDICAL AND SURGICAL NURSING.—This course is designed to increase the student's understanding of the cause and effect of pathologic physiology, and ways by which the alterations produced are managed.

Laboratory: Students spend from 20-30 hours per week studying patient care. Rotation experiences are planned with the chief of service in cardiovascular renal disease, respiratory disease, thoracic surgery, gastroenterology, gastric surgery, neurology, neurosurgery, and with the chairman of the department of medicine on a medical ward. In addition, students have a six weeks' elective experience. Students are welcome to participate in any experiences available in Duke Hospital and the community which they feel will provide learning opportunities. They may attend any conferences they wish, and audit classes, or parts of classes, which they feel will be helpful. No prescribed reading assignment is made. References may be suggested by the instructors, but, in general, the students are encouraged to become familiar with the library and to select their own reading. 16 units

Associate Professor Ingles and Staff; Medical and Surgical Staff

N203-204. THESIS SEMINAR IN PATIENT CARE.—Each Friday afternoon one student presents a patient. Members of the medical team who can contribute to the student's understanding of the patient and the patient's illness are invited to participate as resource persons. A thesis is required. 5 units

Associate Professor Ingles; Assistant Professor Bogdonoff

N205-206. SEMINAR IN PSYCHOPHYSIOLOGICAL AND INTERPERSONAL ASPECTS OF NURSING.—The students meet in a group twice a week with a member of the psychiatric staff who is active in psychophysiological research and clinical areas. The meetings are informal and are aimed at two major areas. (1) An understanding of the interaction of psychic and somatic processes with particular emphasis on the neurophysiologic and psychoendocrinologic factors which may mediate psychosomatic processes. The discussions are usually focused on patients being seen by the students. (2) To explore the meaning and results of the students' interaction with patients, doctors, nurses and other hospital personnel. The investigation of the students' own feelings, attitudes and behavior should lead them to a better understanding of the behavioral and psychosomatic implications of psychologic difficulties, and this should permit them to establish more meaningful patient care programs. 4 units Dr. Sanford Cohen

N207. SEMINAR IN NURSING RESEARCH.—A course designed to acquaint the student with basic techniques and problems in current nursing research. 2 units Associate Professor Preiss; Associate Professor Ingles; Assistant Professor Grant

N209-210. MATERNAL AND INFANT HEALTH.—A study of the trends in maternal and infant care with the aim of increasing the students' ability to contribute to the maintenance and improvement of family-centered care.

The course includes classes and seminars in advanced anatomy and physiology of the normal reproductive system; in genetics, bio-chemistry and endocrinology as they relate to human reproduction; in pathological conditions that may complicate the process of pregnancy; and in embryology, and physiology and development of the fetus and the infant.

Laboratory: Emphasis on continuity of care of the individual mother and infant is planned by offering experiences in special clinics, working with individual obstetricians and pediatricians, making home visits, teaching mothers' classes, giving support in labor and delivery, caring for mother and infant in Rooming-In, and following the family unit in the post-natal period. Students may attend classes, conferences and clinics at Duke University and other community agencies in order to enrich their knowledge of family-centered care. 12 units.

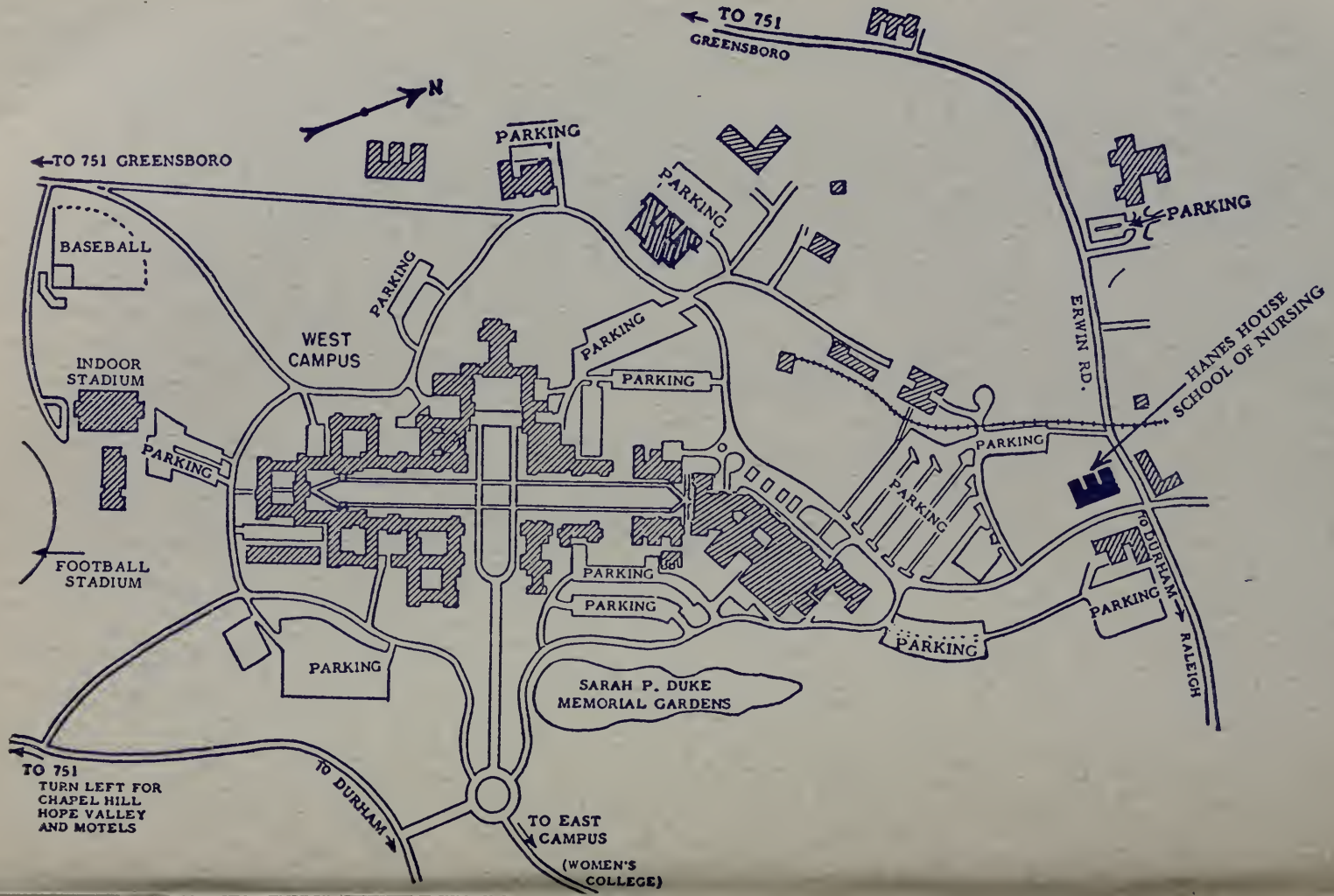
Assistant Professor Grant and Staff; Members of the Obstetric and Pediatric Staff

N211-212. THESIS SEMINAR IN PATIENT CARE.—Weekly seminars will be held in which students will present nursing problems related to the care of the mother and/or infant as members of a family. Members of the medical team and community agencies will be invited to attend as interpreters and resource people. 5 units. A thesis is required. Assistant Professor Grant and Staff; Members of the Obstetric and Pediatric Staff

N213. FIELD WORK IN MATERNAL AND INFANT HEALTH.—Field work will be provided in hospitals and community agencies. 4 units

RESEARCH AND TEACHING FELLOWSHIPS

Application for one year research and teaching fellowships may be made by students who have completed creditably a Masters degree in Nursing. Students will be enrolled in the Graduate School of Duke University and courses taken will be on the graduate level. The program of study will be planned jointly by the director of the graduate nurse program and the director of the department in which the major is taken.


TO 751
GREENSBORO
N
TO 751 GREENSBORO
PARKING
PARKING
PARKING
BASEBALL
WEST CAMPUS
INDOOR STADIUM
PARKING
PARKING
PARKING
PARKING
PARKING
ERWIN RD.
HANES HOUSE
SCHOOL OF NURSING
PARKING
PARKING
FOOTBALL STADIUM
PARKING
PARKING
PARKING
PARKING
TO DURHAM
RALEIGH
PARKING
SARAH P. DUKE
MEMORIAL GARDENS
TO 751
TURN LEFT FOR
CHAPEL HILL
HOPE VALLEY
AND MOTELS
TO DURHAM
TO EAST
CAMPUS
(WOMEN'S
COLLEGE)

BULLETIN
OF
DUKE UNIVERSITY



The School of Law

ANNOUNCEMENTS FOR 1960-1961

VOLUME 32 April, 1960 NUMBER 6-B

Annual Bulletins

For Bulletin of Information for Prospective Students, apply to *The Registrar,* Duke, University, Durham, N. C.

For Bulletin of Undergraduate Instruction, apply to *The Registrar,* Duke University, Durham, N. C.

For Bulletin of The College of Engineering, apply to *The Registrar,* Duke University, Durham, N. C.

For Bulletin of The Graduate School of Arts and Sciences, apply to *The Dean of the Graduate School,* Duke University, Durham, N. C.

For Bulletin of The School of Forestry, apply to *The Dean of the School of Forestry,* Duke University, Durham, N. C.

For Bulletin of The School of Law, apply to *The Dean of the School of Law,* Duke University, Durham, N. C.

For Bulletin of The School of Medicine, apply to *The Dean of the School of Medicine,* Duke University, Durham, N. C.

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For Bulletin of The Divinity School, apply to *The Dean of the Divinity School,* Duke University, Durham, N. C.

For Bulletin of The Summer Session, apply to *The Director of the Summer Session,* Duke University, Durham, N. C.

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BULLETIN

OF

DUKE UNIVERSITY

THE SCHOOL OF LAW

ANNOUNCEMENTS FOR 1960-1961

DURHAM, NORTH CAROLINA
1960

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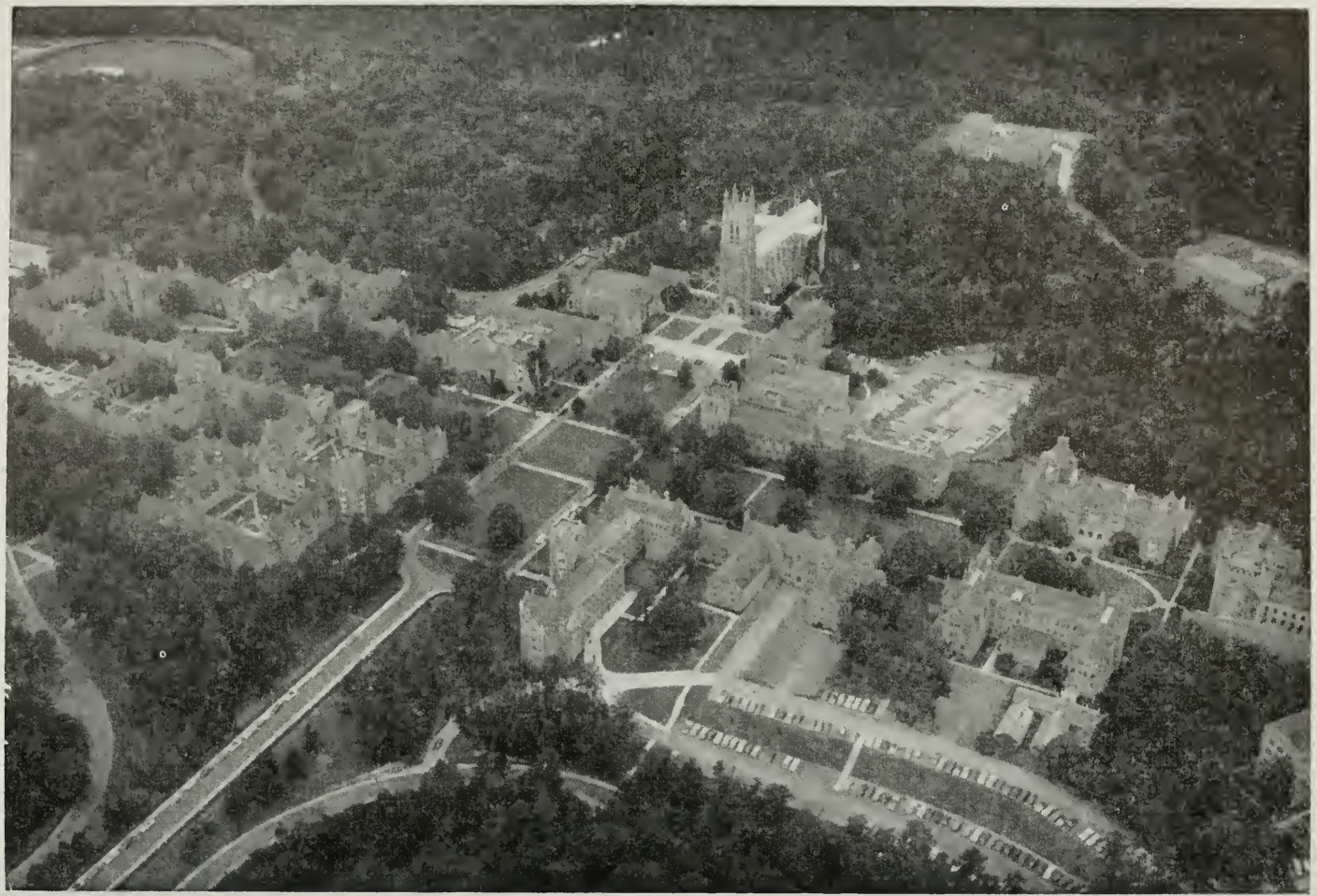
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The Main Unit of the University West Campus

Calendar 1960-1961

1960

Sept. 19—Monday, Registration day for first-year students.

Sept. 21—Wednesday, Registration day for second- and third-year students.

Sept. 22—Thursday, Classes begin, 8 A.M.

Nov. 23—Wednesday, Thanksgiving holidays begin, 1 P.M.

Nov. 28—Monday, Classes resumed, 8 A.M.

Dec. 17—Saturday, Christmas recess begins, 1 P.M.

1961

Jan. 3—Tuesday, Classes resumed, 9 A.M.

Jan. 14—Saturday, Fall semester classes end, 1 P.M.

Jan. 16—Monday, Mid-year examinations begin.

Jan. 26—Thursday, Mid-year examinations end.

Jan. 30—Monday, Spring semester classes begin, 9 A.M.

March 25—Saturday, Spring vacation begins, 1 P.M.

April 3—Monday, Classes resumed, 9 A.M.

May 19—Friday, Spring semester classes end, 1 P.M.

May 22—Monday, Final examinations begin.

June 1—Thursday, Final examinations end.

June 3—Saturday, Commencement begins.

June 5—Monday, Graduating exercises.

Officers of Administration

Arthur Hollis Edens, Ph.D., LL.D. *President of the University*	West Campus
Paul Magnus Gross, Ph.D. *Vice-President in the Division of Education*	Hope Valley
Charles Edward Jordan, A.B., LL.D. *Vice-President in the Division of Public Relations*	615 West Campus
Herbert James Herring, M.A., LL.D. *Vice-President in the Division of Student Life*	2010 Myrtle Drive
Marcus E. Hobbs, Ph.D. *Dean of the University*	115 Pinecrest Road
Alfred Smith Brower, A.B. *Treasurer*	614 West Campus
Gerhard Chester Henricksen, C.P.A. *Business Manager and Comptroller*	216 Forest Wood Drive
John M. Dozier, A.B. *Secretary of the University*	2510 Wrightwood Avenue

LAW SCHOOL COMMITTEE OF THE BOARD OF TRUSTEES

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R. E. Thigpen, Charlotte, North Carolina

B. S. Womble, Winston-Salem, North Carolina

Faculty

Hans W. Baade, A.B., LL.B., LL.M., Dr.iur., Diplômé de Droit International, *Visiting Associate Professor of Law.*

A.B. 1949, Syracuse University; Dr. iur. 1951, University of Kiel, Germany; LL.B., LL.M. 1955, Duke University; Diplômé 1956, Hague Academy of International Law. *Assistent,* 1955, and *Referent,* 1956-1960, Institute of International Law, University of Kiel, Germany. Visiting Associate Professor of Law, Duke University, since 1960.

W. Bryan Bolich, A.B., B. A. (Juris.), M.A., B.C.L., *Professor of Law.*

A.B. 1917, Duke University; Duke University Law School, 1919-1921; B.A. (Juris.), 1923, B.C.L. 1924, M.A. 1928, Oxford University. General practice, 1924-1927; Member North Carolina House of Representatives, 1927; Legal Attaché, American Embassy, Rome, 1950; Visiting Professor of Law, University of North Carolina, Summer 1951, 1955; University of Houston, Spring Semester 1957. Professor of Law, Duke University, since 1927.

John S. Bradway, A.B., A.M., LL.B., LL.D., *Professor of Law Emeritus.*

A.B. 1911, A.M. 1915, LL.D. 1957, Haverford College; LL.B. 1914, University of Pennsylvania. General practice, 1914-1929; Legal Aid Society of Philadelphia, 1914-1920; Chief Counsel, Philadelphia Legal Aid Bureau, 1920-1922; Secretary, National Association of Legal Aid Organizations, 1923-1940, President, 1940-1942; Visiting Professor of Law and Director of the Legal Aid Clinic, University of Southern California, Summer 1928; Professor of Law and Director of the Legal Aid Clinic, University of Southern California, 1929-1931; Vice-President, N. C. Bar Association, 1945-1946; Visiting Professor, University of North Carolina School of Social Work, 1949-1959. Professor of Law and Director of the Legal Aid Clinic, Duke University, 1931-1959; Professor of Law Emeritus, since 1959.

Edwin C. Bryson, LL.B., *Professor of Law.*

University of North Carolina, 1922-1925; Duke University, 1932-1933; LL.B. 1937, University of Oregon. General practice, 1927-1930. Assistant in Duke University Legal Aid Clinic, 1931-1947; Duke University Counsel since 1945; Associate Professor of Law 1947-1954; Professor of Law, since 1954.

Robinson Oscar Everett, A.B., LL.B., *Visiting Associate Professor of Law; Associate Editor,* Law and Contemporary Problems; and *Associate Editor,* Journal of Legal Education.

A.B. 1947, LL.B. 1950, Harvard University. Assistant Professor of Law, Duke University, 1950-1951; Military Service, Legal Officer in Air Force, 1951-1953; Commissioner of the U. S. Court of Appeals, 1953-1955; general practice, since 1955. Visiting Associate Professor of Law, Duke University, since 1956.

Paul Hardin, III, A.B., LL.B., *Assistant Professor of Law; Faculty Advisor,* Duke Law Journal.

A.B. 1952, LL.B. 1954; Duke University. General practice, 1954; Military Service, United States Army Intelligence, 1954-1956; general practice, 1956-1958; Visiting Professor of Law, University of Texas, Summer 1960. Assistant Professor of Law, Duke University, since 1958.

Robert Kramer, A.B., LL.B., *Professor of Law.*

A.B. 1935, LL.B. 1938, Harvard University. Counsel, National Labor Relations Board, 1938-1940; Counsel, Anti-Trust Division Department of Justice, 1941-1942; Military service, 1940-1941, 1942-1946, Lieutenant Colonel, Ordnance Department, Army of the United States; Legal Division, Office Chief of Ordnance; General Counsel, Research and Development Service, Ordnance Department; general practice, 1946-1947; Visiting Professor of Law, New York University, Spring Semester 1958. Associate Professor of Law, Duke University, 1947-1949; Professor of Law, since 1949.

Arthur Larson, A.B., M.A., B.C.L., D.C.L., LL.D., *Professor of Law and Director of World Rule of Law Center.*

A.B. 1931, LL.D. 1953, Augustana College; M.A. (Juris.) 1938; B.C.L. 1957, D.C.L. 1957, Oxford University; Fellow of Pembroke College, Oxford. General Practice, 1935-1939; Assistant Professor of Law, University of Tennessee, 1939-1941; Division Counsel, Office of Price Administration, 1941-1944; Chief, Scandinavian Branch, Foreign Economic Administration, 1944-1945; Associate Professor, Cornell Law School, 1945-1948; Professor of Law, Cor-

nell Law School, 1948-1953; Fulbright Fellowship, London School of Economics, 1952; Dean University of Pittsburgh Law School, 1953-1954; Under Secretary of Labor, 1954-1956; Director, U. S. Information Agency, 1956-1957; Special Assistant to the President 1957-1958; Special Consultant to the President on Rule of Law. Professor of Law and Director of World Rule of Law Center, Duke University, since 1958.

Elvin R. Latty, B.S., J.D., J.Sc.D., *Dean and Professor of Law.*

B.S. 1923, Bowdoin College; J.D. 1930, University of Michigan; J.Sc.D. 1936, Columbia University. Instructor in Romance Languages, University of Vermont, 1923-1927; general practice, 1930-1933; Special Fellow, Columbia University, 1933-1934; Associate Professor of Law, University of Kansas, 1934-1935; Professor of Law, University of Missouri, 1935-1937; Visiting Professor of Law, George Washington University, Summer 1937; Stanford University, Summer 1938; University of North Carolina, Summer 1942, 1947, 1949, 1956; University of Texas, Summer 1951; Fulbright lecturer, University of Pavia, Italy, 1954; Special Assistant to the American Ambassador, Caracas, 1942-1943; Acting Assistant Chief, Foreign Funds Control Division, U. S. Department of State, 1943. Professor of Law, Duke University, since 1937, and Dean of School of Law, since 1958.

Charles H. Livengood, Jr., A.B., LL.B., *Professor of Law.*

A.B. 1931, Duke University; LL.B. 1934, Harvard University. General Practice, 1934-1940; Regional Attorney for the Seventh Region, Wage and Hour Division, U. S. Department of Labor, 1940-1941; Chief of the Wage-Hour Section, Office of the Solicitor of Labor, 1941-1942; Lieutenant Commander, USNR, on active duty, 1942-1945; general practice, 1945-1948; Visiting Professor of Law, University of North Carolina, Summer 1948; George Washington University, Summer 1949, 1956; Fulbright Lecturer, University of Sydney, Australia, 1958-1959. Lecturer in Law, Duke University, 1946-1948; Associate Professor of Law, 1948-1951; Associate Editor, *Journal of Legal Education*, 1951-1952; University Marshal, since 1953; Professor of Law, since 1951.

Charles L. B. Lowndes, A.B., LL.B., S.J.D., *James B. Duke Professor of Law.*

A.B. 1923, Georgetown University; LL.B. 1926, S.J.D. 1931, Harvard University. General practice, 1926-1927; Assistant Professor of Law, Georgetown University, 1927-1928; Professor of Law, Georgetown University, 1928-1930; Research Fellow, Harvard Law School, 1930-1931; Professor of Law, Georgetown University, 1931-1934. Professor of Law, Duke University, since 1934.

Wallace McClure, A.B., LL.B., A.M., Ph.D., *Visiting Professor of Law and Consulting Director of World Rule of Law Center.*

A.B. 1910, LL.B. 1911, University of Tennessee; A.M. 1915, Ph.D. 1924, Columbia University. General practice, 1916-1917 and 1918-1920; Professor, School of Foreign Service, Georgetown University, 1925; Lecturer, Johns Hopkins University, 1936-1937; Officer, U. S. Department of State, 1920-1951; Faculty, American International College, serving U. S. Air Force, 1952-1954; Visiting Lecturer, University of Virginia, 1954-1955; Fulbright Lecturer, University of Dacca, East Pakistan, 1955-1956; Thomas Jefferson Fellowship, University of Virginia, 1954-1958. Visiting Professor of Law and Consulting Director of World Rule of Law Center, Duke University, since 1958.

Malcolm McDermott, A.B., LL.B., *Professor of Law Emeritus.*

A.B. 1910, Princeton University; LL.B. 1913, Harvard University. General practice, 1913-1930; Dean and Professor of Law, University of Tennessee, 1920-1930; Visiting Professor of Law, University of Southern California, Summer 1929; Legal Consultant, Department of Defense, 1951. Professor of Law, Duke University, 1930-1954; Professor of Law Emeritus, since 1954.

Douglas Blount Maggs, A.B., J.D., S.J.D., *Professor of Law.*

A.B. 1922, J.D. 1924, University of California; S.J.D. 1926, Harvard University. General practice, 1924-1925; Assistant Professor of Law, University of California, 1926-1927; Professor of Law, University of Southern California, 1927-1930; Visiting Professor of Law, Columbia University, 1928-1929; Yale University, Spring Semester 1936; University of Pennsylvania, Fall Semester 1957; University of California, Summer 1927; Cornell University, Summer 1928; University of Chicago, Summer 1929; University of Southern California, Summer 1930; Stanford University, Summer 1935; University of North Carolina, Summer 1936, 1948; Visiting Professor, Kyoto University and Doshisha University and Director of Kyoto Center for American Studies, Spring Semester and Summer 1958; Special Assistant to the Attorney General of the United States, 1938-1939, 1942-1943; Chief of Wage-Hour Unit, U. S. Department of Justice, 1939; Chief Consultant to the General Counsel, Board of Economic Warfare, 1942; Chief Legal Consultant, Office for Emergency Management, 1942-1943; Solicitor, U. S. Department of Labor, 1943-1945. Professor of Law, Duke University, since 1930.

Forest Hodge O'Neal, A.B., LL.B., J.S.D., S.J.D., *Professor of Law.*

A.B. 1938, LL.B. 1940, Louisiana State University; J.S.D., 1949, Yale University; S.J.D. 1954, Harvard University. Associate Professor of Law, University of Mississippi, 1945-1946; Professor of Law, University of Mississippi, 1946-1947; Acting Dean and Professor of Law, Walter F. George School of Law, Mercer University, 1947-1948; Dean, Walter F. George School of Law, Mercer University, 1948-1956; Professor of Law, Vander-

bilt University, 1956-1959, Visiting Professor of Law, New York University, 1957-1958, Professor of Law, Duke University, since 1959.

Joel Francis Paschal, A.B., LL.B., A.M., Ph.D., *Professor of Law.*

A.B. 1935, LL.B. 1938, Wake Forest College; A.M. 1942, Ph.D. 1948, Princeton University. Instructor in Law, Wake Forest College, 1939-1940; USNR, 1942-1946; Instructor, Princeton University, 1946-1947; Research Director, North Carolina Commission for the Improvement of the Administration of Justice, 1947-1949; general practice, 1949-1954; Visiting Professor of Law, Duke University, 1952-1953; Visiting Professor, University of North Carolina, Spring Semester 1956. Associate Professor of Law, Duke University, 1954-1959; Professor of Law, since 1959.

Melvin G. Shimm, A.B., LL.B., *Professor of Law; Editor,* Law and Contemporary Problems; *Editor,* Journal of Legal Education, *American Editor,* Journal of Business Law; and *Faculty Advisor,* Duke Law Journal.

A.B. 1947, Columbia University; LL.B. 1950, Yale University. 2nd Lt., FA (AUS), 1943-1946; general practice, 1950-1951; Counsel, Wage Stabilization Board, 1951-1952; Bigelow Fellow, University of Chicago Law School, 1952-1953; Visiting Associate Professor of Law, New York University, Summer 1957. Assistant Professor of Law, Duke University, 1953-1956; Associate Professor of Law, 1956-1959; Professor of Law, since 1959.

Dale F. Stansbury, B.S., LL.B., J.S.D., *Professor of Law.*

B.S. 1914, Valparaiso University; LL.B. 1917, Indiana University; J.S.D. 1929, Yale University. Sterling Research Fellow, Yale University, 1928-1929; Deputy Attorney General of Indiana, 1918-1924, 1928; general practice, 1925-1927; Professor of Law, Mercer University, 1929-1935; Dean and Professor of Law, Wake Forest College, 1935-1944; Professor of Law, University of Tennessee, 1944-1946. Professor of Law, Duke University, since 1946.

Robert Renbert Wilson, A.B., A.M., Ph.D., LL.D., *Professor of Political Science and International Law.*

A.B. 1918, Austin College; A.M. 1922, Princeton University; Ph.D. 1927, Harvard University; LL.D. 1940, Austin College. Carnegie Fellow in International Law, 1922-1923, 1924-1925; Member, Advisory Committee, Harvard Research in International Law, 1935—; Member, Board of Editors, *American Journal of International Law,* 1937—; President, American Society of International Law, 1957-1958; United States Department of State; Assistant in Treaty Division, 1931-1932; Advisor on Commercial Treaties, 1944-1946; Consultant on Commercial Treaties, at various times, 1946-1953; Fulbright Professor, Law School of Istanbul University, 1951-1952. Assistant Professor of Political Science, Duke University, 1925-1927; Associate Professor, 1927-1929; Professor, since 1929; Chairman, Department of Political Science, 1934-1948; Director, Graduate Studies in Political Science, 1937-1947, 1949—; Professor of International Law, since 1948.

VISITING LECTURERS IN LAW

Samuel F. Gantt, A.B., LL.B.
Thomas Meeker, B.A., LL.B.
B. B. Olive, B.S.E.E., LL.B.

LAW LIBRARY STAFF

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Katherine B. Day, B.S., *Assistant Librarian in Charge of Acquisitions*
Madeline Copeland, A.B., A.B. in L.S., *Cataloguer*
Anne C. Walker, *Reading Room Supervisor*

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Margaret B. Long, *Registrar*

The School: Its Purposes and Methods

THE OFFICIAL NAME of the School is the Duke University School of Law, but it will be referred to in these pages as the Duke Law School or the Law School.

The Duke Law School stems historically from the School of Law of Trinity College, with its history of legal instruction running back to the middle of the past century, antedating the Civil War. When, in the 1920's, Trinity College became Duke University, the Law School was completely reorganized. This reorganization culminated with the housing of the Law School in its present building in 1930, when the present character of the Duke Law School can be said to have been stamped.

The curriculum of the Law School provides thorough preparation for the practice of law in any state; its graduates have been admitted to the bar in virtually every state and territory. Opportunities for specialization in particular branches of the law are afforded.

In carrying out the trust imposed by the indenture establishing the Duke Endowment, the Law School seeks to have the student acquire knowledge and comprehension not only of legal doctrine, but also of the judicial process and of the social, economic, and political problems with which law and lawyers must deal. The method of instruction employed compels analysis of judicial opinions and inquiry into the nonlegal as well as the legal considerations which underlie them. In appropriate courses, special consideration is given to the work of the legislative and administrative agencies of government. In recognition of the increasing importance of the role of the lawyer in representing private interests before government agencies and in government service, a broad program is offered in the public law field. Scope for creative student work is provided by seminar courses and supervised individual study and research.

Practical training is not left for the first years of practice. A carefully integrated series of courses is designed to give students actual experience in the work of lawyers. Legal research, writing courses, moot court work and practical study of steps in law suits in the first and second years are followed in the third year by seminar courses emphasizing trial techniques, legal planning and drafting and interdisciplinary approaches particularly in the medico-legal area. A student bar association affords a means whereby the student may gain acquaintance with the professional organizations through which a lawyer may and should contribute to the well-being of his profession and of society.

Admission, Registration, and Fees

Admission

DIRECTIONS TO APPLICANTS FOR ADMISSION

APPLICATION must be made on the prescribed Law School application blank which will be sent upon request. No applicant will be accepted until all required documents are on file. These documents are: (1) the application itself, to which a recently made personal photograph should be attached; (2) a transcript of college record (see next paragraph); (3) a report of the applicant's score on the Law School Admission Test, described below; (4) letters from an official of the college attended and from three or more responsible persons who are acquainted with the applicant's character and general qualifications. *These letters will be requested by the Law School,* and the applicant need only furnish the names and addresses of persons from whom the desired information can be obtained.

Most of our applicants apply at a time when they are still in college, either in the fall or winter of their current college year. We do not ordinarily wait for the completion of the current year's college work before admitting an applicant; normally we take acceptance action on the basis of a transcript showing college work through the junior year, although we may at times ask for a transcript showing also one semester or term of the senior year. Such acceptance is tentative only and is subject to our final action taken in the light of the further supplemental transcript showing all the college work required for admission to the Law School. (However, it is very rare for an accepted applicant to be later rejected on the basis of his completed transcript.) A good time for a student in college to apply, if he has a superior record, is in the fall of his last year.

The Law School Admission Test, referred to above, is administered by the Educational Testing Service. It is given four times a year at examination centers conveniently located throughout the United States. No special preparation for the test is necessary, since it is designed to measure aptitudes rather than knowledge of subject matter. The applicant's score on the test will be considered along with other data in passing upon his admission to the Law School. Application forms and information concerning the test should be procured by writing directly to the Educational Testing Service, 20 Nassau Street, Princeton, New Jersey.

TIMES OF ADMISSION

Beginning students may enter only at the opening of the fall semester in any year. Students who have completed the first year of law study at this or any other law school approved by the Association of American Law Schools may enter at the beginning of any semester.

REQUIREMENTS FOR ADMISSION

An application for admission to Duke Law School as a candidate for the degree of Bachelor of Laws may be submitted by any person who is a graduate of a college of approved standing. Applications may also be submitted by a candidate who has completed in a college of approved standing work equivalent in number of units to three-fourths of that required for graduation and whose college work is of outstandingly superior quality and in its entirety shows an average grade far above that required for graduation, the requirement in each case being determined by the regulations of the college where the works was taken.

COMBINED COURSE

A number of colleges, upon application by their students, have permitted those who have completed three years of undergraduate work to enter the Duke Law School and upon the satisfactory completion of the first year of law school work to receive their Bachelor of Arts degree from such colleges. It is suggested that students desiring to enter Duke Law School make inquiry of their proper college authorities regarding this point.

A student from an undergraduate college of Duke University who has completed therein three years of study may apply to that college to enroll in a combined course wherein his first year of law study may be accepted toward the Bachelor of Arts degree. Upon the completion of four additional semesters of law study, he will receive the Bachelor of Laws degree.

ADMISSION TO ADVANCED STANDING

Any person who has complied with the requirements for admission set forth in this announcement prior to the commencement of his law study, who presents evidence of the satisfactory completion of at least one year of study at any law school which is a member of the Association of American Law Schools, and who is eligible for readmission to the law school from which he proposes to transfer, may be admitted to advanced standing, subject to such rules as would be applicable to students in this School having a comparable scholastic record. Provisional credit for courses so completed will be given, final credit being conditioned on the completion of at least one full year of law study in this School with an average at least five points above the passing

grade. Adjustment of credit for work done in such other law schools may be made by the Dean or by vote of the Faculty.

CANDIDATES FOR GRADUATE DEGREES

Applications for admission to graduate study should be addressed to the Dean of the Law School and should include transcripts of records of legal and prelegal work. For the requirements for the graduate degrees, see pages 20 and 21.

Registration

Registration is conducted in the Law Building. All students, both old and new, are required to register at the beginning of each semester, at which time class schedules and course cards must be filled out and approved. Students who register in any semester at a date later than that prescribed are required to pay to the Treasurer of the University a penalty of $5.00 for late registration unless excused therefrom. A student's registration for any semester is not complete until he has paid the tuition and fees for that semester. The $5.00 penalty for late registration will be imposed, therefore, unless the student has paid his tuition and fees by registration day.

REGISTRATION FOR BAR EXAMINATION

Many states now require that a student, prior to or shortly after beginning the study of law, register with the board of bar examiners of the state if he intends to practice therein. Each student should write to the secretary of the board of bar examiners of the state in which he plans to practice and ascertain if that state makes this requirement.

CONDUCT OF STUDENTS

All students are admitted subject to the rules of the University and of the Law School, and continuance in the School is conditioned upon the observance of such rules.

The University expects of its students loyal and hearty co-operation in developing and maintaining high standards of conduct as well as of scholarship. The University, therefore, reserves the right, and matriculation by the student is a concession of this right, to compel the withdrawal of any student whose conduct at any time is not satisfactory to the University.

Fees and Expenses

Tuition fees are due at the beginning of each semester. As of the present writing, the tuition fee is $325.00 a semester, but the applicant

is advised to get the latest information about tuition charges. In addition, a general fee of $50.00 per semester is required in lieu of separate fees for matriculation, medical service, and the like.

The admission of an applicant is not final until he deposits the sum of $25.00 with the Treasurer of the University. This deposit will not be returned, but will be credited to the account of the student.

Law students may secure admission to all regularly scheduled University athletic contests held on the University grounds and may use the facilities of the Duke Golf Course (upon payment of student green-fees) during the entire academic year by payment of the athletic fee of $10.00 per year plus any Federal taxes that may be imposed. This fee is payable in the fall semester.

The payment of the general fee entitles the student to the medical and surgical care described later in this Bulletin under "Medical Care." Due to rising costs it may be necessary to consider some readjustment of these charges. In the event of an adjustment applicants will be notified.

It is estimated that the expense of a careful unmarried student at Duke Law School, aside from tuition and fees, can be kept around $1,000 per academic year.

SCHOLARSHIPS, LOANS, AND EMPLOYMENT

General scholarships are available to students who have a superior record and who show promise of success in the study of law. General scholarships are usually sufficient in amount to cover tuition, and for students with outstanding records and promise the amount may be substantially in excess of tuition.

Besides the general scholarship fund, five Regional Scholarships of $1,200 each for applicants from North Carolina and South Carolina have been made available. Such scholarships will be awarded annually on a competitive basis to the residents of the states of North Carolina and South Carolina who qualify as entering law students. Such scholarships are renewable for a maximum period of three years on the condition that the holder maintain a scholastic average of "B" or higher in the School of Law. The total amount awarded to the recipient who qualifies for the maximum period is $3,600. Details concerning these scholarship awards will be furnished upon request.

In addition, students who are not awarded one of the above scholarships may still be eligible to receive, in their first year of law study, Southern Scholarships if they come from one of the following states: Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, or West Virginia. The amount of these scholarships is based in general on differentials in costs that

may be involved in going to law school at Duke University as compared with a law school at the student's home location.

General and Regional scholarship grants will be continued as to second- and third-year students maintaining a high standard of work. There are also a number of positions as assistants in the Law Library and as research assistants which are open to students, particularly in their second or third year, who do not receive other aids from the University.

Loans covering tuition and other expenses are available to students who have completed at least one semester in residence and whose records have been satisfactory. Loans generally mature after borrowers have left the University. Loan interest on long-term loans begins to accrue at the rate of 1 per cent from the date of the note, but after the student has left the University permanently the loan will begin bearing interest at 3 per cent per annum for the following five-year required-payment period. The University's Student Loan Committee in approving loans selects those students who, from the standpoint of character, scholastic attainment, personality and degree of financial need, are deserving of this consideration. The University participates in the National Defense Student Loan Program, under which loans are administered by the same Committee under these same standards.

A special fund is also available for law students for small loans to tide over temporary financial emergencies arising during the course of the year.

Although it is not advisable for a law student to undertake any substantial amount of outside work, arrangements have been made to provide part-time employment for capable law students who otherwise would be unable to meet the expense of studying law at Duke.

GRADUATE LAW FELLOWSHIPS

Graduate fellowships in limited amounts are available. To be eligible for these grants, applicants must have completed with distinction the work required for the first degree in law at this Law School or some other school approved by the Association of American Law Schools, and must have been admitted to candidacy for the LL.M. or S.J.D. degree. Preference will be given to students who plan to make law-teaching a career. All applications should be addressed to the Dean of the School of Law, Duke University. Fellowships will be awarded by the law Faculty on recommendation of the Committee on Graduate Study.

DINING SERVICE

Food service is cafeteria style. The cost of meals approximates $1.75 to $2.50 per day, depending on the need and taste of the indi-

vidual. The dining facilities on the West Campus include three cafeterias with multiple-choice menus and the Oak Room, where full meals and a la carte items are served.

In the Men's Graduate Center there is a cafeteria with multiple-choice menus and a Coffee Lounge where sodas and sandwiches are served from 11:30 A.M. to 11:00 P.M. The prices in these dining rooms are the same as on the West Campus.

LIVING ACCOMMODATIONS

The Men's Graduate Center is available to men of the Law School. The rooms are equipped for two persons, and the rental charge for a double room is $400.00 for the academic year or $200.00 for each occupant ($100.00 per semester for each occupant).

Epworth Hall on the Woman's College Campus is available to women enrolled in the Law School. The rental charge for a single room is $275.00 for the academic year or $137.50 each semester. The rental charge for a double room is $450.00 for the academic year or $225.00 for each occupant ($112.50 per semester for each occupant).

The University does not operate housing facilities for married students. Married students should arrange for rooms or apartments in the city. In order to aid married students, the Housing Bureau maintains a file on rooms and apartments listed for rental to Duke students.

Applications for rooms are to be made to the Housing Bureau, Duke University, Durham, N. C. Rooms are rented for the academic year, but for no period less than one semester unless by special arrangement. No refund of room rent will be made except for involuntary withdrawal to enter the armed services. Such refunds will be made in accordance with the University's established schedule.

Regulations governing the occupancy of rooms will be supplied by the Housing Bureau to those students making application for housing. Occupants are expected to abide by these regulations.

Law students are advised to make early application to the Housing Bureau, since assignment of rooms is made considerably in advance of the beginning of each semester. The applicant should state that he has been accepted for admission to the Law School.

MEDICAL CARE

With exceptions noted below, full medical and surgical care is furnished to all regularly matriculated law students of the University who have paid the semester general fee. This service is under the direction of the Physician in charge with the co-operation of the Staff of Duke Hospital. It includes hospitalization (limited to thirty days), medical and surgical care, drugs, dressings, x-ray studies, and ward (but

not special) nursing. A charge for board is made at the same rate as in the University dining halls. Refraction of eyes and treatment of teeth and of all chronic and pre-existing conditions, such as diseased tonsils, hernia, elective surgery, chronic skin conditions, endocrine disturbances, etc., or accidents or illnesses occurring during vacations or while off the campus are not included in this service. The cost of any necessary braces and orthopaedic appliances, as well as of special nursing must be borne by the patient. If the student has insurance providing hospitalization, surgical, or medical benefits, the benefits shall be applied to the cost of his medical care.

LAWS REGARDING PAYMENTS

The Executive Committee of Duke University has enacted the following regulations which govern the payment of all fees due the University:

1. The President and the Treasurer of the University have no authority to suspend or in any way alter these regulations.

2. Any student who has failed to pay his bills on the dates advertised in the catalogue is denied the right to attend classes until his account is settled in full; subsequent withdrawal does not entitle a student to a refund.

3. No student is considered by the Faculty as an applicant for graduation until he has settled with the Treasurer for all his indebtedness to the University.

4. No student who has not settled all his bills with the Treasurer of the University is allowed to stand the midyear or final examinations of the academic year.

When a student wishes his bills sent to his parents or guardian, the student or his parent or guardian must so notify the Treasurer of the University in writing in due time, but this in no way releases the student from liability to established penalties, if his bills are not paid on the dates advertised.

Further information will be sent upon request. Address

The Dean of the School of Law
Duke University
Durham, North Carolina

Bachelor of Laws Degree

UPON favorable recommendation of the Faculty, the degree of Bachelor of Laws will be conferred on students who shall have successfully completed six semesters' study of law, the last two semesters of work immediately preceding the granting of such degree having been completed in this School.

A student shall be deemed to have completed successfully six semesters' study of law if during this period he has

(1) secured a passing grade in courses aggregating eighty semester hours (except that 78 hours only are required for students graduating prior to 1962);

(2) secured in every required course a grade not requiring repetition thereof; and

(3) secured a weighted average at least five points above passing in all work taken other than first-year courses, or, if the grade in such work is lower than that above specified, an average grade of five points above passing in all work taken.

Students who have spent only their last two semesters of study in residence in this School must have received a weighted average at least five points above passing for that year.

MINIMUM AND MAXIMUM STUDENT LOANS

No regular student is permitted to take less than twelve course hours per semester. No first-year student is permitted to take courses in excess of the first-year program.

Second- and third-year students are not permitted to take for credit more than sixteen course hours per semester; nor to audit and take for credit more than seventeen course hours per semester. In exceptional cases, students may petition the Faculty for permission to take more or less than the prescribed maximum or minimum loads.

ATTENDANCE

Regular class attendance is required. The right to take the examinations, as well as the privilege of continuing one's membership in the School at any time, is conditioned upon regular attendance at the exercises of the School.

STANDARDS OF SCHOLARSHIP

GRADES—The final grades in each course are given in numerical terms which are equivalent to letter grades according to the following scale: 80 to 100, A; 70-79, B; 55-69, C; 50-54, D; 0-49, F.

A grade of 50 is necessary for passing a course. Where a grade below 50 is given a student in any required course, the course must be repeated if the instructor reports the grade with the notation "must repeat." When a student successfully repeats a course which he had failed, he is merely given a "P" (for "pass") in that course and neither the course nor the grade is recognized in computing his average.

Eligibility to Continue Law Study.—Any student who at the end of his first year or at the end of any subsequent semester has an average grade lower than 50 on all the work then taken is ineligible to continue his work in the School. Any other student (1) whose average final grade at the end of his first semester is below 50, or (2) whose average grade at the end of any subsequent semester on all the work then taken is below 55, or (3) who in any single semester or in any single year receives failure grades in courses totaling eight or more semester hours, may at any time be declared by the Dean ineligible to continue.

Notification of Unsatisfactory Scholastic Standing.—Every student subject to the provisions of the second sentence of the paragraph above, who has not been declared ineligible to continue his work in the School will be given a formal, written notice by the Dean's Office. This notice will set forth his average grade or grades and inform him (1) that he will be subject for the ensuing year to the special supervision of the Dean, who may order his dismissal from the School in the event of his failure to maintain a satisfactory scholastic standard, and (2) that he will be ineligible to receive a degree unless his work meets the scholastic requirements for graduation, which will be set forth in full in such notice.

Every other student whose average final grade at the end of any semester on the work of that semester, or on all work then taken, does not exceed the minimum average grade required for graduation by more than two points will be given a notice similar to that provided for above.

Graduate Work in Law

Objective of the Graduate Study Program

THE graduate program of the School of Law is framed with a view to the encouragement and recognition of legal scholarship. It is addressed to the needs of those who have objectives consistent with the purposes of graduate legal education. It provides training for the qualified student who aspires to a teaching career, or who wishes to become proficient in a special field of the law, to do serious legal research, to prepare himself for a public law practice in or out of government, or to acquire a broader and deeper legal education than the undergraduate curriculum offers.

Master of Laws

ADMISSION TO CANDIDACY FOR THE DEGREE OF MASTER OF LAWS

Any person who has received the first degree in law from a law school qualified for membership in the Association of American Law Schools may be admitted as a candidate for the degree of Master of Laws, provided he satisfies the Committee on Graduate Study that his objective in desiring to do graduate work in law is consistent with the purposes for which the program is offered, and provided he demonstrates to the Committee, on the basis of his law school record, his capacity to take and profit by graduate work in law. In exceptional cases an applicant who does not meet the above requirements may, on vote of the Faculty, be admitted to candidacy for this degree if he is able to demonstrate that he is specially qualified, as by reason of practice or teaching. Normally the applicant will be required to show a level of scholarship appreciably higher than that required for the first degree in law at the institution from which he received that degree. An exceptionally high record in law school and in the graduate study program is expected of those who aspire to a teaching career.

REQUIREMENTS FOR THE DEGREE OF MASTER OF LAWS

The degree of Master of Laws is reserved for students who, having demonstrated their capacity for graduate work in law, maintain a level

of scholarship substantially higher than that required for the degree of Bachelor of Laws.

The candidate for this degree is required to complete a course of study comprising not less than twenty nor more than twenty-six semester hours, or approved research equivalent thereto. Two full semesters are required for the completion of this program. A candidate for this degree is required to include in his course of study at least two courses from Jurisprudence, Legal History, and the International or Comparative Law area. Other suitable courses will be selected by the candidate subject to the approval of the Committee on Graduate Study. In special circumstances, credit not in excess of two hours per semester may be arranged for special, supervised research projects. In addition to the minimum requirement of twenty semester hours, the candidate is required to submit an essay representing substantial research on a legal subject. This essay is to be prepared under the supervision of the instructor in charge of the field in which the research is done. The candidate will find it helpful to have formulated a project of research, or alternative projects, before his admission to graduate study or, at any rate, before pursuing his graduate study in residence. In appropriate cases, the candidate will be encouraged to take related work in other departments of the University.

Doctor of Juridical Science

ADMISSION TO CANDIDACY FOR THE DEGREE OF DOCTOR OF JURIDICAL SCIENCE

Any person holding the degree of Master of Laws from this or any other law school which is qualified for membership in the Association of American Law Schools may, on vote of the Faculty, be admitted to candidacy for the degree of Doctor of Juridical Science (S.J.D.), provided he completed the work for the Master's degree with distinction.

REQUIREMENTS FOR THE DEGREE OF DOCTOR OF JURIDICAL SCIENCE

Upon favorable recommendation of the Faculty, the degree of Doctor of Juridical Science will be conferred on students admitted to candidacy for that degree who complete and submit a monograph or series of essays suitable for publication and deemed by the Faculty to be of distinguished character and who pass an oral examination before a special committee appointed for that examination. At least one academic year and, in the absence of an extension granted by the Faculty, not more than three years must elapse between the award of the Master's degree and the award of the degree of Doctor of Juridi-

cal Science. Students who have received the degree of Master of Laws from another law school must spend at least two full semesters engaged in research at this School, and in addition may be required to complete a course of study prescribed by the Committee on Graduate Study. The monograph or series of essays required may be based upon, or be an extension of, the essay required for the Master's degree, provided substantial additional research is represented.

Facilities and Activities

The Law School Building and Its Facilities

THE Law Building, like all other structures on the main campus of Duke University, is in Tudor Gothic style of colorful Cambrian stone from the Duke University quarries. In it are classrooms, seminar rooms, office for Faculty and Staff, quarters for the World Rule of Law Center and for the Duke Bar Association, a courtroom equipped for trial court and appellate court sessions, a student lounge, and the Law Library. For a description of dormitory accommodations, see page 16.

THE LAW LIBRARY

The Law Library, containing a collection of well over one hundred thousand volumes, is one of the large law school collections in the country. It consists of American and English statutory and case law; a collection of Continental law materials; treatises, digests, encyclopedias; the various selected case series; a comprehensive collection of legal periodicals; and publications in the fields of history, economics, government, and other social sciences, supplemental to the strictly legal materials. The Library receives every current legal periodical of general interest printed in the English language and complete up-to-date legislation of the United States and of every state and territory of the Nation.

There are many thousands of additional volumes of a legal nature in the main University Library Building, immediately adjoining the Law School, as well as the general collection of over a million volumes, to all of which the law students and Faculty have convenient access.

The Law Library is administered by a professionally trained staff and is open to the public daily and in the evenings whenever the Law School is in session and daily even when the School is not in session.

PRACTICAL TRAINING IN SKILLS AND CRAFTS

The Duke Law School has always pioneered in combining the broad theoretical training every lawyer needs with practical instruction in the crafts of draftsmanship, trial and appellate practice, research and writing, counseling, and negotiation. Thus, the Law School operated, for over a quarter century (1931-1959), its famed

Legal Aid Clinic under its founder, Professor John S. Bradway. When Professor Bradway reached retirement age in 1959, he had developed for the Law School a wealth of experience, techniques, and clinical-material cases suitable for use in the regular substantive law courses. In addition, virtually every member of the faculty has had actual experience in both private practice (some in large metropolitan firms, some with small firms) and government service. Consequently, faculty members assign in their substantive law courses practical problems in the drafting of legal instruments, the counseling of clients, the settlement of disputes, and the trial and appeal of cases. Moreover, in the first two years, there are required courses which stress research, writing, moot court briefs and arguments, and practical aspects of tactical steps in litigation, with individual instruction and critiques from various faculty members who have had extensive experience with this type of work. In his third year, every student is offered the opportunity to develop skills in the type of problems that nowadays cross the lawyer's desk. For those wishing this type of training, there are seminars offering individual instruction and emphasizing practical aspects in estate planning, trial practice, medico-legal problems, corporate planning and drafting, antitrust litigation, international business transactions, labor relations, federal jurisdiction, real estate transactions, criminal procedure, constitutional law litigation, financing in the S.E.C. regulated area, etc.

WORLD RULE OF LAW CENTER

In the fall of 1958, the Duke Law School established its World Rule of Law Center, with Professor Arthur Larson as its Director.

The purpose of this Center is to advance the objective of getting legal rules and procedures accepted and used in the settlement of international disputes, including disputes of a kind that threaten world peace. It aims to do this by maintaining a nucleus and clearing house for ideas, activities, and research that will advance this aim. At the same time, the activities of the Center are expected to lead to further expansion of the already substantial opportunities at Duke University for international law studies.

A staff has now begun work, researches are under way and publications are soon to appear. The establishment of the Center has already made available to Duke law students courses in World Law and in Comparative Law, arrangements have already been made for a course in the Law of International Economic Relations for the fall of 1960, and there will be further courses tying in with the work of the Center, as well as opportunities for special research projects, for students having particular interest in this area.

Publications

LAW AND CONTEMPORARY PROBLEMS

The School of Law publishes a quarterly, *Law and Contemporary Problems,* edited by Professor Melvin G. Shimm. This periodical, now in its twenty-fifth volume, presents in each issue a symposium on a problem of current importance, in which the interrelated social and economic, as well as legal, factors are discussed by writers of competence in these respective fields.

The circulation of *Laws and Contemporary Problems* extends not only to members of the legal profession and law libraries throughout the country, but also to industrial and financial concerns, governmental agencies, and public and general university libraries. Individual issues are not infrequently used as materials for study in University courses.

JOURNAL OF LEGAL EDUCATION

The *Journal of Legal Education,* a quarterly, is also edited at the School of Law under the direction of Professor Melvin G. Shimm. The publication serves as the organ for the Association of American Law Schools, providing a clearing house for ideas and professional studies in the constantly expanding field of legal education. The editorial policy of the *Journal of Legal Education* is determined by an editorial board named by the Association, assisted by an advisory committee consisting of prominent legal educators and practicing attorneys.

DUKE LAW JOURNAL

The School publishes quarterly the *Duke Law Journal,* the material of which, except for leading articles contributed by outstanding professors of law and lawyers, is written entirely by law students. Professor Shimm, with the cooperation of other Faculty members, supervises generally the operations of the *Journal.*

CORPORATE PRACTICE COMMENTATOR

The *Corporate Practice Commentator,* a quarterly periodical devoted to significant developments and new thinking in the field of corporation law and practice, is edited by Professor F. Hodge O'Neal. Although the *Commentator* is published by a commercial concern, it is assembled and manuscript is prepared in the School of Law under the direction of Professor O'Neal. The *Commentator* gives attention to matters of interest and importance to counselors and managers of corporate and other business enterprises. Primary emphasis is placed on corporation law and practice in the narrow sense, but a considerable amount of space is devoted to antitrust questions, labor matters, pat-

ents and copyrights, executives' compensation, fair trade legislation, and other matters arising out of business activities.

Organizations and Activities

THE DUKE BAR ASSOCIATION

The Duke Bar Association is open to all the students of the Law School and is organized along the lines of the American Bar Association. Its purpose is to introduce the student to the problems considered by the bar in professional organizations and to develop professional consciousness and responsibility. A Faculty Committee on Student Affairs serves as general adviser to the student officers.

MOOT COURTS

A program of student Moot Court arguments is conducted under the supervision of the Faculty as a part of the courses in Research and Writing in which all students are required to participate.

AMERICAN COMMERCIAL BANK AWARDS

The American Commercial Bank sponsors an annual will-drafting contest in cooperation with the law schools of Duke University, University of North Carolina, and Wake Forest College. All students who are enrolled in these respective law schools, but who are not practicing or who have not actively practiced law, are eligible to participate. The two best entries from each school are awarded $50. In addition the best entry from the three schools is awarded $150 and the second best entry from the three schools $50, so that the total prize awarded to the best draftsman amounts to $200 and to the second best draftsman $100.

AMERICAN JURISPRUDENCE PRIZE AWARD

American Jurisprudence prizes, joint gifts of the Bancroft-Whitney Company, San Francisco, California, and The Lawyers Cooperative Publishing Company, Rochester, New York, consisting of specially-bound titles from American Jurisprudence, are awarded to the students receiving the highest grade on the various subjects.

EDWIN P. FRIEDBERG AWARD

Edwin P. Friedberg, a member of the Raleigh bar, awards annually a copy of the Commerce Clearing House Standard Federal Tax Reports for the current year to the graduating student who has done the best work in federal taxation while he has been in the Law School.

JAMES F. BYRNES SENATE PRIZE

Delta Theta Phi Foundation, Inc., through the James F. Byrnes Senate, awards each year to that member of the first-year class who has completed the work of the first year with the highest average a small plaque bearing his name and denoting the honor which he has attained. The winner's name is also inscribed on a larger, permanent plaque which hangs in the Law Building.

HUGHES INN OF PHI DELTA PHI BOOK AWARD

An award of second-year first-semester textbooks is made annually by Hughes' Inn of Phi Delta Phi legal fraternity to a rising second-year student of Duke University Law School on the basis of over-all merit of the student in his first year of law school study.

LAW WEEK AWARD

The United States LAW WEEK Award, a prize of approximately $100 value, is given to the graduating student in law who, in the judgment of a Faculty committee, has made the most satisfactory scholastic progress in his final year. The Award consists of a year's complimentary subscription to LAW WEEK, which reports every week important new court decisions and federal agency rulings, and all Supreme Court opinions.

LAWYERS TITLE AWARD

Established in 1954 by the Lawyers Title Insurance Corporation of Richmond, Virginia, this prize of one hundred dollars will be awarded annually to that student attaining the highest average grade in the real property courses: Estates in Land, Conveyancing, and Future Interests.

ORDER OF THE COIF

A chapter of the Order of the Coif, national legal scholarship society, has been established at Duke University School of Law. Its purpose is "to foster a spirit of careful study and to mark in a fitting manner those who have attained a high grade of scholarship." Election is restricted to the ten per cent of the graduating class who have attained the highest rank in their law school work.

NATHAN BURKAN MEMORIAL COMPETITION

The American Society of Composers, Authors and Publishers (ASCAP) awards each year to students in this law school a first prize of $150 and a second prize of $50 for the two best papers on any phase of copyright Law. Winning papers are considered for a National award of $500.

WILLIS SMITH PRIZE

The late Willis Smith, for many years a prominent member of the Raleigh bar and Chairman of the Board of Trustees of Duke University, who was serving in the United States Senate at the time of his death, June 26, 1953, provided, for over twenty years, an annual award to that member of the graduating class of the Law School who had maintained the highest scholastic average during the entire three years of law school work. The prize consisted of a set of valuable books selected by the donor and the Dean. Mr. Smith's family has made arrangements to continue this prize in his memory.

In addition to the prizes and awards described above, prizes consisting of law books and other legal items are offered by various law book publishers to students meeting prescribed standards of accomplishment in certain fields.

RECREATIONAL FACILITIES

The University is located about two miles from the business district of Durham on wooded hills constituting part of the five-thousand-acre Duke Forest, which is maintained by the School of Forestry. Within a short distance from the campus are facilities for golf, horseback riding, and woodland hiking. Students of the Law School are entitled to the use of the University gymnasium, tennis courts, swimming pool, golf course, and similar privileges. Motion pictures are shown in Page Auditorium twice a week, and concert programs, recitals, lectures, and plays are presented frequently.

Program of Instruction

The First-Year Program

All students are required to take the first-year courses listed below. A detailed description of these courses and the other courses listed under the Program of Instruction appears at pages 31 to 37 of this Bulletin.

	Semester Hours	
	Fall	Spring
Chattel Transactions	2	
Contracts	3	3
Criminal Law and Procedure	2	2
Research and Writing I	1	1
Torts	3	2
Civil Procedure	3	3
Property I	2	2
Business Associations I		3
	16	16

The Recommended Second-Year

The recommended second-year program is given below. Research and Writing II is required. Second-year students may substitute third-year courses for other second-year courses with the permission of the instructors in the substituted courses. However, a student omitting a second-year course from his second-year program may find himself unable to take that course in his third year because it may be scheduled at the same hour as a third-year course which he wishes to take.

Each student must take courses aggregatng 12 to 16 hours each semester, except that, with the consent of the Dean, a student may take more or less.

	Semester Hours	
	Fall	Spring
Evidence	2	2
Constitutional Law	2	3
Business Associations II	2	2
Commercial Law	2	3
Property II	4	
Trusts	3	
Research and Writing II [Required]	1	
Administrative Law		3
Federal Taxation I		3
	16	16

The Third-Year Program

Each student must take courses aggregating 12 to 16 hours each semester, except that, with the consent of the Dean, a student may take more or less.

	Semester Hours	
	Fall	Spring
Labor Relations	4	
Debtors' Estates	3	
Federal Taxation II	3	
Jurisprudence	3	
International Economic Relations	3	
Unfair Competition (not offered 1960-61)	3	
World Law	2	
Equitable Remedies	2	
Medico-Legal Problems	2	
Workmen's Compensation	2	
Securities Regulation	2	
North Carolina Practice	2	
Administration of Estates	2	
Family Law	2	
Legal History (not offered 1960-61)	2	
Conflict of Laws		3
International Law		3
Public Regulation of Business		3
Conveyancing (in 1960-61 only)		3
Real Estate Transactions (not offered 1960-61)		3
Security (in 1960-61 only)		3
Labor Standards		2
Civil Liberties & Rights		2
Federal Jurisdiction		2
Insurance		2
Corporate Planning & Drafting		2
Federal Taxation III		2
Tax & Estate Planning		2
Trial Practice		2
North Carolina Statutes & Decisions		2
Comparative Law		2
Criminal Law Seminar (not offered 1960-61)		2
Legal Profession		1
Patent Law		1

Description of Courses

Business Courses

BUSINESS ASSOCIATIONS I. Legal principles concerning association in business by agency, partnership, other unincorporated forms and corporations. Creation, form and nature of agency, partnership and corporation, corporate existence (de facto corporations, corporate entity and its limitations), powers, duties, liabilities and compensation of agents, partners, officers and directors, risks in conduct of business by representatives (vicarious liability in tort, authority to contract), imputation of notice and knowledge, scope of enterprise (ultra vires), revocation and termination of authority, ratification, undisclosed business associates, stability of the associational relationship. The purpose of this course is to grasp basic principles of Agency and Partnership and introductory related principles of corporation law. (The main basic study of corporation law, however, is in Business Associations II.) Three hours a week second semester. MR. LATTY

BUSINESS ASSOCIATIONS II. Promoters, subscription to and issue of shares, stock structure and corporate capital, dividends, preferred stock, bonds, capital increases and reduction, corporate re-acquisition of own stock, elementary principles of corporate accounting, public issue of securities, stock transfers, fundamental corporate change (recapitalization, sale, merger and consolidation, dissolution), stockholders' suits, and certain principles concerning management and operation not studied in Business Associations I. Two hours a week throughout the year.
MR. O'NEAL

COMMERCIAL LAW. An integrated study of the law governing commercial transactions, embracing the fields of sales and sales financing, chattel security, and negotiable instruments. Two hours a week first semester, three hours a week second semester. MR. SHIMM

CONTRACTS. The formation and legal operation of contracts in general, with attention to problems of drafting and counseling as well as of litigation and extrajudicial settlement. Legal and equitable remedies in contract cases, including damages, specific performance, and restitutionary remedies, and important procedural devices incident to such remedies. Three hours a week throughout the year.
MR. STANSBURY

CORPORATE PLANNING AND DRAFTING. The student is given hypothetical corporate problems (perhaps taken from the practicing lawyer's desk) on a client's proposed course of action; each problem is designed to require the student to grasp the business situation and goals involved, analyze for pertinent legal principles, plan the transaction to avoid legal and business (including taxation) pitfalls, plan the requisite steps to consummate the desired transaction, draft the appropriate papers and present his research. Two hours a week first semester.
MR. O'NEAL

DEBTORS' ESTATES. Comparative study of methods used for the liquidation of debtors' estates. The nonbankruptcy materials cover individual creditor's rights by attachment, garnishment, execution, creditors' bills and the like; common law composition; and general assignments. The bankruptcy materials cover, in the main, the first seven chapters of the Bankruptcy Act. Three hours a week first semester. MR. SHIMM

INSURANCE. The nature of "insurance"; state supervision and control; types of insurance organization; the legal requirement of insurable interest; interest of

others than the named insured; the measure of indemnity and subrogation; the beneficiary's interest in life insurance; the insured event, and excepted causes; warranties, representations and concealment; the making of insurance contracts; waiver, estoppel and election. Two hours a week second semester. MR. HARDIN

INTERNATIONAL ECONOMIC RELATIONS. See Public Law Courses page 34 for description. Three hours a week first semester. MR. BAADE

NEGOTIABLE INSTRUMENTS. Comparative study of the different types of commercial instruments, their different functions and legal incidents. Two hours a week second semester. MR. SHIMM

PUBLIC REGULATION OF BUSINESS. See Public Law Courses, page 35 for description. Three hours a week second semester. MR. LIVENGOOD

SECURITIES REGULATION. Regulation of distribution and marketing of securities and protection of the investor under the Securities Act of 1933, the Securities and Exchange Act of 1934, the Public Utility Holding Company Act of 1935 and the Trust Indenture Act of 1939, with summary treatment of other related federal legislation; the role of the Securities and Exchange Commission; a brief survey of state regulation. Considerable emphasis is placed on civil liabilities under the federal legislation. Two hours a week second semester.
MESSRS. MEEKER AND O'NEAL

SECURITY. Mortgage and security interests in real property, and suretyship. Three hours a week second semester. MR. EVERETT

UNFAIR COMPETITION. Specific unfair trade practices at common law and under state and federal statutes. Includes trademarks and tradenames, appropriation of business ideas and plans created by another, Federal Trade Commission regulation of misrepresentation practices, state fair trade acts and statutes prohibiting sales below cost, price discrimination under Robinson-Patman Act, boycotts, and disparagement. Three hours a week first semester. (Not offered in 1960-61.)

Property Courses

CHATTEL TRANSACTIONS. The course uses the field of Personal Property and the traditional title-passing rules of Sales to appraise judicial reasoning and legal concepts. It serves both as a low-level course in judicial methodology and an introduction to commercial law. It deals with possession and title of chattels, the bailment relationship, artisan's lien, transfer of chattels by gift and miscellaneous inter-vivos transactions. It does not go into details of enforcement of buyers' and sellers' rights or sales financing. Two hours a week first semester.
MR. LATTY

PROPERTY I. The basic concepts of real property law and conveyancing. Historical background; estates in land, including the fee simple, the fee tail with its statutory substitutes, the life estate, the estate for years and other non-freeholds; concurrent ownership; types of future interests; conveyances before and after the Statute of Uses; landlord and tenant; the modern deed—kinds, delivery, description, title covenants; recording and title registration. Two hours a week throughout the year. MR. BOLICH

PROPERTY II. The various rules and concepts governing transmission of property from one generation to another, including the materials normally covered in the traditional courses on Wills and Future Interests. Historical background; intestate succession at common law and under modern statutes; limitations upon testamentary power; execution and revocation of wills; contest of wills; lapse, ademption and satisfaction; future interests, comprising reversions, remainders, executory interests, rights of entry, possibilities of reverter, and their incidents; class gifts; powers of appointment; rule against perpetuities and other restrictions on the creation of interests; construction of wills and deeds. Four hours a week first semester. MR. BOLICH

CONVEYANCING. Form and execution of deeds, description in deeds; rents, licenses, easements and profits; covenants and agreements running with the land at law and in equity; estoppel by deed; recording and title registration; aspects of public control of land use. Three hours a week second semester. MR. BOLICH

REAL ESTATE TRANSACTIONS. Aspects of real estate practice including problems of land-use development through private devices involving restrictive covenants, easements, conditions and other concepts; public control by zoning and subdivision legislation; and public-private cooperative arrangements such as urban renewal. Three hours a week second semester. (Not offered in 1960-61.)

TAX AND ESTATE PLANNING. Seminar devoted to problems and techniques of tax and estate planning. Federal Taxation I and Federal Taxation II and Property II are prerequisite to enrollment in the seminar. Enrollment limited. Two hours a week second semester. MESSRS. BOLICH AND LOWNDES

TRUSTS. The nature, creation and elements of a trust; character and transfer of the beneficiary's interest; charitable trusts; administration of trusts; termination and modification of trusts; liabilities to and of third persons; enforcement of trusts; and constructive and resulting trusts. Three hours a week first semester. MR. LOWNDES

ADMINISTRATION OF ESTATES. Probate and administration; grant of administration; probate and contest of wills; assets; contracts, sales and investments by personal representative; claims; settlement of the estate. Two hours a week second semester. MR. EVERETT

Public Law Courses

ADMINISTRATIVE LAW. The formulation of statutory schemes of administrative regulation: the organization of administrative agencies; the determination, promulgation and enforcement of administrative programs; the respective spheres of administrative and judicial responsibility; judicial control over administrative action. Practice and procedure before administrative agencies: informal conferences and negotiations; formal hearings; constitutional limitations. Three hours a week second semester. MR. KRAMER

CIVIL LIBERTIES AND CIVIL RIGHTS SEMINAR. Studies in the field of personal liberties (freedom of speech, press, religion, association, etc.) and in the field of civil rights (right to non-discriminatory treatment, right to fairness in procedure, etc.). The seminar will be concerned with issues about which the law is unsettled, and especially with issues raised in cases pending before the Supreme Court of the United States. Two hours a week second semester. MR. MAGGS

CONSTITUTIONAL LAW. Judicial protection against arbitrary governmental action; the history of the concept of a "higher law"; the constitutional clauses relied upon. Limitations on governmental power with respect of economic matters, civil liberties and criminal and civil procedure. The powers of Congress, express and implied; limitations on State governmental powers resulting from the existence and from the exercise of Congressional powers. The constitutional questions involved in administrative law, conflict of laws, intergovernmental tax immunities, jurisdiction to tax, and state taxation of interstate commerce are covered more fully in other courses. Two hours a week first semester, three hours a week second semester. MR. MAGGS

CRIMINAL LAW AND PROCEDURE. An introductory study of the law of crimes and the administration of criminal justice; analysis of the criminal act and the mental element in crime; consideration of specific offenses as defined by statute and the common law; discussion of typical defenses in relation to specific crimes; study of the Anglo-American penal system. Two hours a week throughout the year. MR. LIVENGOOD

CRIMINAL LAW SEMINAR OR MILITARY LAW SEMINAR. If the student demand is for military law, this course will deal with military jurisdiction and the

body of both substantive and procedural law that has developed under the Uniform Code of Military Justice; in addition to its other goals, the seminar seeks to develop skills in statutory interpretation and to encourage comparisons between civilian and military criminal law administration. Otherwise, the course will deal with criminal law matters that cannot be adequately treated in the introductory criminal law course—such topics as involuntary confessions and the McNabb rule, the indigent defendant, scientific criminal investigation and the protection of an accused's rights, mental responsibility and continental criminal procedure, with considerable field work contemplated. Two hours a week second semester. (Not offered in 1960-61.)

FEDERAL JURISDICTION. A study of the federal courts with respect to the part played by them in achieving a workable federalism. Special attention will be given to the original jurisdiction of the federal district courts, the relationship of the federal courts to state courts and state law, and the permissible and desirable range of federal judicial power. Two hours a week second semester. MR. PASCHAL

FEDERAL TAXATION I. An introduction to federal taxation with emphasis on the federal income tax. The topics considered include such basic concepts of income taxation as taxable income, deductions, the taxable person, accounting for income and deductions, computation of the tax, and capital gains and losses. Three hours a week second semester. MR. LOWNDES

FEDERAL TAXATION II. A more advanced course in federal taxation. The principal emphasis of the course is on the federal estate and gift taxes. Consideration is also given, however, to the related portions of the federal income tax dealing with the taxation of the income of estates and trusts and income in respect of a decedent. Three hours a week first semester. MR. LOWNDES

FEDERAL TAXATION III. An advanced course in the federal income tax. Among the topics considered are the taxation of corporations and corporate distributions, corporate reorganizations and readjustments, the personal holding company surtax and the accumulated earnings tax, the taxation of partnerships, and of corporations electing to be taxed as partnerships. Two hours a week second semester. MR. LOWNDES

INTERNATIONAL LAW. A survey of public international law of peace, as evidence especially in decisions of national and of international courts; the drafting and interpretation of treaties; the nature and handling of international claims; the organization and jurisdiction of international tribunals, with special reference to the International Court of Justice; developments with respect to the codification of the law. Three hours a week second semester. (In case an insufficient number of students enroll for this course, special arrangement is made for law students to take graduate courses in this field in the Department of Political Science.)
MR. WILSON

INTERNATIONAL ECONOMIC RELATIONS. Legal framework of U. S. foreign trade and investment; foreign trade and investment laws of selected foreign countries; function of international economic law; international economic agreements; problems of foreign trade and investments. Three hours a week first semester. MR. BAADE

LABOR RELATIONS. A study of the law relating to collective bargaining and concerted labor activities, including the National Labor Relations Act and related legislation, the legal aspects of strikes, boycotts and picketing, the negotiation and administration of collective bargaining agreements, procedures for the settlement of labor disputes, and relations between the union and individual employees. Four hours a week first semester. MR. LIVENGOOD

LABOR STANDARDS. Government regulation of conditions of employment, including the Fair Labor Standards Act and other wage-hour and child-labor statutes, unemployment insurance and other social security legislation, employers' liability and workmen's compensation acts, and related laws establishing minimum standards for the creation, continuance and termination of the employment relationship. Two hours a week second semester. MR. LIVENGOOD

PATENT LAW (and related fields). A short survey of the law relating to patents and trademarks, with some coverage of copyrights, primarily to give the general practitioner a foundation in these areas to collaborate effectively with specialists. Special attention is given to overlapping problems in above-mentioned areas. One hour a week second semester. MR. OLIVE

PUBLIC REGULATION OF BUSINESS. Study of the federal antitrust laws and their common-law background, with emphasis on the economic policies involved. As a corollary of critical examination of the Sherman Act, Clayton Act, Federal Trade Commission Act and related legislation designed to enforce competition as the primary control of the economic system, some consideration is given to legal measures which supplement or replace competition, such as direct regulation of business and government intervention by public loans, guaranties and ownership. Three hours a week second semester. MR. LIVENGOOD

TAX AND ESTATE PLANNING. See Property Courses, page 33, for description. Two hours a week second semester. MESSRS. BOLICH AND LOWNDES

UNFAIR COMPETITION. See Business Courses, page 32, for description.

WORKMEN'S COMPENSATION SEMINAR. The main elements of Workmen's Compensation Law of the United States are covered through the assignment of typical office problems on which legal memoranda or opinions are prepared. Two hours a week first semester. MR. LARSON

WORLD LAW. This is a discussion seminar open to students of the Law School and the Political Science Department, and to a limited number of other students with satisfactory backgrounds. The emphasis of this course is around those aspects of National law and International law which have an important influence on weakening or strengthening a world legal order. Detailed attention is given to the United States judicial decisions, other laws, and relevant policies effecting the relation of the United States to such a world legal system. Special attention is also given to decisions of the International Court of Justice and to Constitutional treaties. The course will not duplicate the material in the regular course on International Law. Efforts are made through the seminar discussions to develop an adequate concept of world law. Two hours a week second semester.
MESSRS. LARSON AND MCCLURE

General Courses

COMPARATIVE LAW. An examination and comparison of the law of selected jurisdictions on certain specific topics. The history, sources, and methods of the civil law will be investigated, discussed, and compared with those of common law countries. Three hours a week second semester.

CONFLICT OF LAWS. A study of the special problems which arise when the significant facts of a case are connected with more than one jurisdiction. Recognition and effect of foreign judgments; choice of law; federal courts and conflict of laws; the United States Constitution and conflict of laws. Three hours a week second semester. MR. KRAMER

EQUITABLE REMEDIES. A survey of equitable remedies in general (including enforcement of equity decrees) and of important parts of the fields of equity and restitution that are not covered in other courses. Two hours a week first semester. (Not offered 1959-60.)

FAMILY LAW. Marriage; annulment; divorce; separation; property rights. Two hours a week first semester. MR. GANTT

JURISPRUDENCE. Discussion of some of the basic problems of classical and contemporary juristic theory, with applications to cases and statutes. Open to all graduate students, and, with the consent of the instructor, to qualified second and third year students. Three hours a week first semester. MR. HARDIN

LEGAL HISTORY. A study of the development of fundamental English and American legal institutions, with primary emphasis upon the establishment and growth of American law from the colonial period to the present. Two hours a week second semester. (Not offered in 1960-61.)

NORTH CAROLINA STATUTES AND DECISIONS. A study of selected statutes of North Carolina with discussion of their application, and an analysis of the decisions of the Supreme Court of North Carolina construing them. Two hours a week second semester. MR. BRYSON

TORTS. The bases of liability in damages for personal injuries and injuries to property; bases other than fault; negligence; intentional infliction of harm. Procedure in jury trials; proof of negligence; causation and "proximate cause"; defenses. Special rules applicable to occupiers and owners of land, motor vehicle accidents, suppliers of goods and remote contractors. Misrepresentation and fraud; defamation; assault and battery; false imprisonment. Three hours a week first semester, two hours a week second semester. MR. MAGGS

Procedure and Practice Courses

CIVIL PROCEDURE. A study of the adjudication of civil cases with special emphasis on the Federal Rules of Civil Procedure. Three hours a week throughout the year. MR. PASCHAL

CIVIL PROCEDURE II. Parties to a civil action; right to jury trial; the division of function between judge and jury; instructions; jurisdiction; res judicata; appellate procedure. Three hours a week first semester. MR. PASCHAL

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Upon recommendation of the Committee on Graduate Study, seminars not listed in the Bulletin may be created or arrangements made for supervision of special research by individual graduate students in any subject.

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Directory of the Officers, Faculty, and Staff

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OF

DUKE UNIVERSITY



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OF THE

OFFICERS, FACULTY, AND STAFF

DURHAM, NORTH CAROLINA

1960

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Hugh Anderson (1957), B.D., Ph.D.
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* Absent on sabbatical leave, fall semester, 1959-60.
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*Lewis Edward Anderson (1936), Ph.D.
Professor of Botany — 2020 Sunset Avenue

Roger Fabian Anderson (1950), Ph.D.
Professor of Forest Entomology — 2528 Perkins Road

William Banks Anderson (1930), M.D.
Professor of Ophthalmology — 502 East Forest Hills Boulevard

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Hans W. Baade, (1960), LL.B., LL.M.
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Kurt W. Back (1959), Ph.D.
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Lenox Dial Baker (1937), M.D.
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Professor of Pathology — 303 Swift Avenue

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Instructor in Romance Languages — 3852 Summerset Drive

William Barry (1955), M.D.
Associate Professor of Radiology and Chief of Radiology of Durham Veterans Administration Hospital — 1022 Gloria Avenue

‡Robert V. R. Bassett, Jr. (1956), B.S., Captain, U. S. Navy
Professor of Naval Science

George Jay Baylin (1939), M.D.
Professor of Radiology and Associate in Anatomy — 2535 Wrightwood Avenue

* Absent on sabbatical leave, 1959-60.
† Absent on sabbatical leave, spring semester, 1959-60.
‡ Resigned August 31, 1959.

Charles A. Baylis (1952), Ph.D.
Professor of Philosophy — 601 East Markham Avenue

Reaves H. Baysinger (1959), B.S., Lieutenant Commander, U. S. Navy
Assistant Professor of Naval Science — 611 West Markham Avenue

William Waldo Beach (1946), B.D., Ph.D.
Professor of Christian Ethics — 130 Pinecrest Road

Mrs. Dorothy Waters Beard (1938), R.N.
Associate in Surgery — Route 3, Hillsboro, N. C.

Joesph Willis Beard (1937), M.D.
Professor of Surgery in Charge of Experimental Surgery;
Associate Professor of Virology — Route 3, Hillsboro, N. C.

Robert L. Beare (1959), Ph.D.
Assistant Professor of German — Apartment H
1301 Leon Street

George S. Beaudreau (1959), Ph.D.
Assistant Professor of Virology — 1828 Forest Road

Roland Frederick Becker (1951), Ph.D.
Associate Professor of Anatomy — 920 Monmouth Avenue

Winfred E. A. Bernhard (1958), M.A.
Instructor in History — G-3B University Apartments

Frederick Bernheim (1930), Ph.D.
Professor of Pharmacology — 115 Woodridge Drive

Mrs. Mary Lilias Christian Bernheim (1930), Ph.D.
Associate Professor of Biochemistry — 115 Woodridge Drive

Percy Levy Bernstein (1959), M.A.T.
Temporary Instructor in Mathematics — 1722 Duke University Road

Edward Willard Berry (1936), Ph.D.
Professor of Geology — 1003 North Gregson Street

Mrs. Helen Smith Bevington (1943), M.A.
Associate Professor of English — Box 128, Route 2, Guess Road

Merle Mowbray Bevington (1942), Ph.D.
Professor of English — Box 128, Route 2, Guess Road

Lucius Aurelius Bigelow (1929), Ph.D.
Professor of Chemistry — 131 Pinecrest Road

William Dwight Billings (1952), Ph.D.
Professor of Botany — 708 Louise Circle

Edward G. Bilpuch (1959), Ph.D.
Visiting Assistant Professor of Physics — Box 674, Chapel Hill, N. C.

Robert W. Binkley (1957), Ph.D.
Instructor in Philosophy — Apartment 2
Sedgefield and Markham Avenue

Martin Lee Black, Jr. (1930), M.B.A., C.P.A.
Professor of Accounting — 135 Pinecrest Road

John O. Blackburn (1959), Ph.D.
Visiting Assistant Professor of Economics — 705 Hudson Avenue

William Maxwell Blackburn (1926), Ph.D.
Professor of English — 402 Buchanan Boulevard

Robert Lincoln Blake (1949)
Associate in Medical Art and Illustration — 609 Ruby Street

Martin M. Block (1952), Ph.D.
Associate Professor of Physics and Research Associate — 2255 Cranford Road

Chauncey D. Bly (1959), M.D., Ph.D.
Associate Professor of Pathology — 1103 Anderson Street

James Robert Bly (1949), M.S.
Assistant Professor of Physical Education — 2001 Ruffin Street

Morton Bogdonoff (1957), M.D.
Associate Professor of Medicine — 2425 Wrightwood Avenue

William Bryan Bolich (1927), M.A., B.C.L.
Professor of Law — 3724 Hope Valley Road

Edward Claude Bolmeier (1948), Ph.D.
Professor of Education — 217 Faculty Apartments

Robert A. Bonar (1959), Ph.D.
Assistant Professor of Biophysics in Department of Surgery — 3306 Chapel Hill Road

Allan Hadley Bone (1944), M.M.
Professor of Music — 2314 West Club Boulevard

C. Alan Boneau (1957), Ph.D.
Assistant Professor of Psychology — 911 Murray Avenue

James Bonk (1959), Ph.D.
Instructor in Chemistry — 2415 Club Boulevard

Cazlyn Green Bookhout (1935), Ph.D.
Professor of Zoology — 1307 Alabama Avenue

Mrs. Elizabeth Circle Bookhout (1932-43; 1945), M.S.
Professor of Physical Education — 1307 Alabama Avenue

*Lloyd J. Borstelmann (1953), Ph.D.
Assistant Professor of Medical Psychology in Department of Psychiatry and Assistant Professor in Department of Psychology — 305 Francis Street, Rockwood

†Michel Bourgeois-Gavardin (1953), M.D.
Associate Professor of Anesthesiology

Francis Ezra Bowman (1945), Ph.D.
Associate Professor of English — 2114 Woodrow Street

Benjamin Boyce (1950), Ph.D.
Professor of English — 1200 Dwire Place

Thomas Allen Boyle (1957), M.S. in M.E.
Associate Professor of Mechanical Engineering — 1308 Anderson Street

†John I. Bradbury (1957), B.S., Lieutenant, U. S. Navy
Instructor in Naval Science

David Gilbert Bradley (1949), Ph.D.
Associate Professor of Religion — 707 Hudson Street

‡Harold L. Bradley (1950), B.S.
Associate Professor of Physical Education

§Charles Kilgo Bradsher (1939), Ph.D.
Professor of Chemistry — 118 Pinecrest Road

†Louis Richard Bragg (1955), Ph.D.
Assistant Professor of Mathematics

Ralph J. D. Braibanti (1953), Ph.D.
Professor of Political Science — 2614 Stuart Drive

Jack W. Brehm (1958), Ph.D.
Assistant Professor of Psychology — 3214 Duke Homestead Road

Bernard Bressler (1954), M.D.
Associate Professor of Psychiatry — 2700 Circle Drive

Roberta Florence Brinkley (1947), Ph.D., LL.D.
Professor of English — East Campus

Mrs. Edith Brocker (1955), R.N., M.A.
Associate Professor of Nursing and Assistant Dean of the School of Nursing — 1326 Welcome Circle

Jens Brodersen (1959), Dipl. Dolm.
Temporary Instructor in German — 2541 Chapel Hill Road

* Absent on leave, 1959-60.
† Resigned August 31, 1959.
‡ Resigned May 4, 1959.
§ Absent on sabbatical leave, 1959-60.

*Robert Maurice Broderson (1952), M.F.A.
Assistant Professor of Aesthetics, Art, and Music and Assistant Professor of Education — 2015 Walnut Street

Edwin L. Brown (1958), M.A.
Instructor in Greek — 206 East Woodridge Drive

Frances Campbell Brown (1931), Ph.D.
Professor of Chemistry — 1205 Dwire Place

George H. Brown (1958), E.E., M.D.
Associate Professor of Radiology — 1608 Greenleaf Street

Ivan Willard Brown, Jr. (1940-42; 1945), M.D.
Associate Professor of Surgery — 1709 Vista Street

†Joan Brown (1958), B.S.N.
Instructor in Nursing

Robert Guy Brown (1957), M.A.
Instructor in Medical-Sociology and Instructor in Sociology — 2915 Fairview Road

†William Hugh Brownlee (1948), Th.M., Ph.D.
Associate Professor of Old Testament

Edward Byerly Brucker (1960), Ph.D.
Part-time Visiting Assistant Professor in Physics and Research Associate — 1405 Watts Street

‡Paul Robey Bryan, Jr. (1951), Ph.D.
Associate Professor of Music — 2118 West Club Boulevard

Joseph Allen Bryant, Jr. (1959), Ph.D.
Associate Professor of English — 911 Green Street

Edwin Constant Bryson (1931), LL.B.
Professor of Law — 818 Anderson Street

Victor Albert Bubas (1959), B.S.
Instructor in Physical Education and Head Varsity Basketball Coach — 1021 Anderson Street

§Michael J. Buckingham (1956), Ph.D.
Visiting Assistant Professor of Physics

Louis J. Budd (1952), Ph.D.
Assistant Professor of English — 1011½ Dacian Avenue

Albert George Buehler (1955), B.A.
Instructor in Physical Education — K-3A University Apartments

Mrs. Je Harned Bufkin (1949), R.N., R.R.L.
Associate Professor of Medical Record Library Science — 912 Anderson Street

Everett I. Bugg, Jr. (1953), M.D.
Associate in Orthopaedics — 1544 Hermitage Court

†Mrs. Grace Nielsen Bullock
Instructor in Nursing

Richard E. Burwell (1960), M.A.
Temporary Instructor in English — 923 Demerius Street

William S. Bush, Jr. (1959), Docteur de l' Université de Paris
Instructor in Romance Languages — 1711 Lakewood Avenue

Ewald W. Busse (1953), M.D.
Professor of Psychiatry — 1423 Woodburn Road

Gale Herbert Buzzard (1956), B.S. in M.E.
Instructor in Mechanical Engineering — Route 1, Hillsboro, N. C.

William Lawrence Byrne (1954), Ph.D.
Assistant Professor of Biochemistry — 2921 Hope Valley Road

* Absent on sabbatical leave 1959-60.
† Resigned August 31, 1959.
‡ Absent on sabbatical leave, spring semester 1959-60.
§ Resigned June 30, 1959.

Elinor Caddell (1959), M.S.N.
Instructor in Nursing — 707 Louise Circle

*Nathan R. Callaghan, Jr. (1957), D.D.S.
Associate in Dentistry

Jaspar Lamar Callaway (1937), M.D.
Professor of Dermatology and Syphilology — 828 Anderson Street

Donald Amos Calleson (1955), B.S. in M.E.
Instructor in Mechanical Engineering — 928 Lambeth Circle

Edmund McCullough Cameron (1926), A.B.
Director of Physical Education and Athletics — 2818 Chelsea Circle, Hope Valley

†Emily Brently Campbell (1955), R.N., B.S.N.E.
Instructor in Nursing Arts — Ryan Street

William L. Canine, Jr. (1958), M.A.
Instructor in English — Route 1, Moncure, N. C.

‡James Cannon (1919), A.M., Th.M.
Ivey Professor of the History of Religion and Missions

Leonard Carlitz (1932), Ph.D.
Professor of Mathematics — 2303 Cranford Road

John William Carlton (1955), B.D., Ph.D.
Assistant Professor of Preaching — 208 Faculty Apartments

David Williams Carpenter (1929), Ph.D.
Professor of Physics — 137 Pinecrest Road

John Winder Carr, Jr. (1926), Ph.D.
Professor of Education — 926 Monmouth Avenue

§Warren Carr (1958), A.B., B.D., Th.M.
Visiting Lecturer of Pastoral Care

Gale H. Carrithers, Jr. (1958), M.A.
Instructor in English — 907 Shepherd Street

R. Charman Carroll (1944), R.N., A.B., M.D.
Associate Professor of Psychiatry — Highland Hospital, Asheville, N. C.

Bayard Carter (1931), M.D.
Professor of Obstetrics and Gynecology — 2111 Myrtle Drive

Allan Murray Cartter (1952), Ph.D.
Professor of Economics — 1208 Dwire Place

William H. Cartwright (1951), Ph.D.
Professor of Education — 2114 Myrtle Drive

Mrs. Helen Kennard Castellano (1947), M.A.
Assistant Professor of Romance Languages — 2511 Perkins Road

Juan Rodriguez Castellano (1947), Doctor en Filosofía y Letras
Professor of Romance Languages — 2511 Perkins Road

Matthew O. Caulfield (1959), B.A.
Instructor in Latin — 1008 Monmouth Avenue

Leon Edward Chaiken (1952), B.S., M.F.
Professor of Forest Management and Assistant Director of the Forest — 2737 Dogwood Road

¶Mrs. Roma Sawyer Cheek (1947), Ph.D.
Assistant Professor of Political Science — 210 Cottage Lane, Chapel Hill, N. C.

Clifton Cherpack (1958), Ph.D.
Associate Professor of Romance Languages — 1010 Minerva Avenue

Walter B. Cherny (1957), C.M., L.M.C.C., M.D.
Assistant Professor of Obstetrics and Gynecology — 1510 Carolina Avenue

* Resigned, January 24, 1960.
† Absent on leave, 1959-60.
‡ Died, March 10, 1960.
§ Resigned May 31, 1959.
¶ Absent on sabbatical leave, fall semester, 1959-60.

Ernest W. Chick (1958), M.D.
Associate in Pathology and Clinical Investigation at Veterans Hospital — 611 Watts Street

John S. Chipman (1960), Ph.D.
Visiting Associate Professor of Economics — 1601 Duke University Road

Elon Henry Clark (1934)
Professor of Medical Art and Illustration — Erwin Road

Kenneth Willis Clark (1931), B.D., Ph.D.
Professor of New Testament — 1308 West Markham Avenue

Lelia Ross Clark (1949), R.N., M.A.
Professor of Nursing Service — 880 Louise Circle

*Romane Lewis Clark (1953), Ph.D.
Associate Professor of Philosophy — Apartment 10, Sedgefield and Markham Avenue

†James W. Clarke (1958), Ph.D.
Visiting Associate Professor of Geology

‡James T. Cleland (1945), M.A., Th.D.
James B. Duke Professor of Preaching — 2117 Mrytle Drive

Frank W. Clippinger (1957), M.D.
Associate in Orthopedics — 1302 Oakland Avenue

George Alan Clugston (1958), M.A.
Instructor in English — L-1B University Apartments

Paul Hibbert Clyde (1937), Ph.D.
Professor of History — 1406 Woodburn Road

§Paul Whitlock Cobb (1955), B.S.
Instructor in Physical Education

§Mrs. Mary Browder Cochran (1957), B.S. in P.E.
Instructor in Physical Education

Louis David Cohen (1946), Ph.D.
Professor of Psychology and Professor of Medical Psychology — 1505 Acadia Street

Sanford I. Cohen (1957), M.D.
Assistant Professor of Psychiatry — 1527 Woodburn Road

‡Robert Taylor Cole (1935), Ph.D.
James B. Duke Professor of Political Science — 7 Sylvan Road

Joel G. Colton (1947), Ph.D.
Associate Professor of History — 2801 Dogwood Road

*Robert Merle Colver (1953), Ed.D.
Associate Professor of Education — 2720 Circle Drive

William Wesley Combs, Jr. (1958), A.M.
Instructor in English — 2717 Augusta Drive

Norman Francis Conant (1935), Ph.D.
Professor of Microbiology and Consultant to Department of Medicine for Mycology — Route 3, Box 62, Old Cornwallis Road

¶Robert Howe Connery (1949), Ph.D.
Professor of Political Science — 1722 Duke University Road

**Evelyn Vail Coonrad (1952-53: 1955), M.D.
Associate in Medicine — 2203 Sprunt Street

Raphael W. Coonrad (1960), M.D.
Associate in Orthopaedics — 2203 Sprunt Street

*Thomas Howard Cordle (1950), Ph.D.
Associate Professor of Romance Languages — 2420 Perkins Road

* Absent on sabbatical leave, fall semester, 1959-60.
† Resigned May 31, 1959.
‡ Absent on sabbatical leave, 1959-60.
§ Resigned August 31, 1959.
¶ Absent on leave of absence, 1959-60.
** Absent on leave, effective September 30, 1959.

*John D. Costlow (1959), Ph.D. *Assistant Professor of Zoology*	Duke University Marine Laboratory Beaufort, N. C.
Robert Calvin Cox (1942), M.A. *Assistant Professor of Physical Education*	1913 University Road
Robert Lawrence Craig (1938), M.D. *Associate in Psychiatry*	Highland Hospital Asheville, N. C.
Joyce Crane (1960), R.N., M.S.N. *Instructor in Nursing*	Hanes House
Theodore R. Crane (1958), Ph.D. *Instructor in History*	809 Watts Street
Robert Nowell Creadick (1946), M.D. *Associate Professor of Obstetrics and Gynecology*	1200 Anderson Street
William L. Culberson (1955), Ph.D. *Assistant Professor of Botany*	King Road, Route 1
†Fay M. Culpepper (1958), B.S. *Instructor in Economics*	
John Shelton Curtiss (1945), Ph.D. *Professor of History*	Route 2, Box 129 Guess Road
Robert Earl Cushman (1945), B.D., Ph.D. *Professor of Systematic Theology*	2022 Mrytle Drive
W. Kenneth Cuyler (1959), Ph.D. *Associate Professor of Cytology and Anatomy*	Route 1, Box 52
Bingham Dai (1943), Ph.D. *Professor of Psychology and Professor of Medical Psychology*	2404 Perkins Road
Mrs. Jo Ann Baughan Dalton (1958), B.S.N. *Instructor in Medical-Surgical Nursing*	Poplar Apartments Brown Avenue
‡Boyd Lee Daniels (1952), B.D., Ph.D. *Assistant Professor of Religion*	220 Dacian Avenue
Paul G. Daston (1958), Ph.D. *Assistant Professor of Psychology and Assistant Professor of Medical Psychology*	3415 Hope Valley Road
†Ollie Belle Davenport (1958), B.S.N. *Instructor in Nursing*	
Eugene A. Davidson (1957), Ph.D. *Assistant Professor of Biochemistry*	1002 Camden Avenue
J. Kenneth Davies (1959), Ph.D. *Visiting Assistant Professor of Economics*	1608 Green Street
§Gifford Davis (1930), Ph.D. *Professor of Romance Languages*	2248 Cranford Road
Mrs. Atala Thayer Scudder Davison (1942), M.D. *Associate in Pediatrics*	Norwich Way, Hope Valley
Wilburt Cornell Davison (1927), M.D., D.Sc., LL.D. *James B. Duke Professor of Pediatrics*	Norwich Way, Hope Valley
Hans E. Debrunner (1959), Ph.D. *Research Instructor in Mathematics*	1021 West Trinity Avenue
John Essary Dees (1939), M.D. *Professor of Urology*	413 Carolina Circle
Mrs. Susan Coons Dees (1939), M.D. *Professor of Pediatrics*	413 Carolina Circle
William J. DeMaria (1951), M.D. *Associate Professor of Pediatrics*	1501 Woodburn Road

* Absent on leave, December 1, 1959-November 30, 1960.
† Resigned August 31, 1959.
‡ Absent on sabbatical leave, fall semester, 1959-60.
§ Absent on sabbatical leave, spring semester, 1959-60.

Sara Jamison Dent (1955), M.D.
Associate Professor of Anesthesiology — Hillsboro, N. C.

William Ernest DeTurk (1949), M.D., Ph.D.
Associate Professor of Pharmacology — 2513 Pickett Road

Frank Traver de Vyver (1935), Ph.D.
Professor of Economics — 8 Sylvan Road

Donald J. Dewey (1950), M.A.
Associate Professor of Economics — 1026 West Trinity Avenue

*David Powley DeWitt (1957), M.S. in M.E.
Instructor in Mechanical Engineering

Irving Diamond (1958), Ph.D.
Associate Professor of Psychology — 1506 Fir Street

Macdonald Dick (1932), M.D.
Assistant Professor of Physiology and Pharmacology and Associate in Medicine — 3005 Norwich Way, Hope Valley

Robert L. Dickens (1949), M.S., C.P.A.
Associate Professor of Accounting — 2717 Circle Drive

Marcus L. Dillon (1956), M.D.
Associate Professor of Surgery — 203 Francis Street

George Edward Dorris (1957), M.A. — 617 Park Place Lane
Instructor in English — Chapel Hill, N. C.

Robert H. Dovenmuehle (1956), M.D.
Assistant Professor of Psychiatry — 3527 Hamstead Court

Mrs. Marie-Therese Liniere Dow (1934), L.ès L., M.A.
Assistant Professor of Romance Languages — 2252 Cranford Road

Neal Dow (1934), Ph.D.
Professor of Romance Languages — 2252 Cranford Road

Owen W. Doyle (1957), M.D. — 1013 Professional Village
Associate Professor of Radiology — Greensboro, N. C.

Francis George Dressel (1929), Ph.D.
Professor of Mathematics — 309 Francis Street

Kenneth Lindsay Duke (1940), Ph.D.
Associate Professor of Anatomy — 701 West Club Boulevard

Charles H. Duncan (1959), B.A., Lieutenant Colonel, U. S. Air Force
Professor of Air Science — 3621 Britt Street

Marion Mahan Duncan (1956), Ph.D.
Visiting Assistant Professor of Physics — 3407 East Oak Drive

Arthur Stephen Dunning (1959), Ph.D.
Assistant Professor of Education — 1022 Urban Avenue

†Robert F. Durden (1952), Ph.D.
Assistant Professor of History — 2532 Wrightwood Avenue

George Sharp Eadie (1930), Ph.D.
Professor of Physiology and Pharmacology — 3433 Dover Road, Hope Valley

Watt Weems Eagle (1930), M.D.
Professor of Otolaryngology — 804 Anderson Street

Paul H. Earls (1959), Ph.D.
Visiting Lecturer in Music — 113 Faculty Apartments

Mrs. Eleanor Beamer Easley (1934), M.D.
Associate in Obstetrics and Gynecology — 604 West Chapel Hill Street

Ruth Buchanan Eddy (1952), M.S.
Assistant Professor of Physical Education — Box 6836, College Station

Ray L. Edwards (1959), Ph.D.
Visiting Lecturer in Physics — 2714 Dogwood Road

* Resigned August 31, 1959.
† Absent on sabbatical leave, fall semester, 1959-60.

Carl Eisdorfer (1958), Ph.D.
Assistant Professor of Medical Psychology in Department of Psychiatry and Lecturer in Department of Psychology — 2537 Chapel Hill Road

William Whitfield Elliott (1925), Ph.D.
Professor of Mathematics — 4721 Duke Station

Ernest Elsevier (1950), M.S. in M.E.
Associate Professor of Mechanical Engineering — 2413 Wrightwood Avenue

Frank Libman Engel (1947), M.D. — 1302 Oakland Avenue
Professor of Medicine and Associate Professor of Physiology

*Paul J. English (1956), A.B., Captain, U. S. Air Force
Assistant Professor of Air Science

E. Harvey Estes (1953), M.D.
Associate Professor of Medicine — 3542 Hamstead Court

John Wendell Everett (1932), Ph.D.
Professor of Anatomy — 2605 University Drive

Robinson Oscar Everett (1956), LL.B.
Visiting Associate Professor of Law — 119 North Dillard Street

Don D. Ezell (1957), M.Ed., Major, U. S. Marine Corps
Assistant Professor of Naval Science — 613 West Markham Avenue

*William Martin Fairbank (1952), Ph.D.
Professor of Physics

Carmen M. Falcone (1946), M.A.
Associate Professor of Physical Education — D-1A University Apartments

Amerigo Farina (1958), Ph.D.
Assistant Professor of Psychology — 942D Lambeth Circle

Judith Farrar (1952), A.B., B.S.
Professor of Medical Literature — 117 Faculty Apartments

Donn Michael Farris (1959), B.D., M.S. in L.S.
Assistant Professor of Theological Bibliography and Librarian — 921 Buchanan Boulevard

John Morton Fein (1950), Ph.D.
Associate Professor of Romance Languages — 2742 Circle Drive

Charles Fenton (1958), Ph.D.
Professor of English — 2535 Perkins Road

†Arthur Bowles Ferguson (1939), Ph.D.
Associate Professor of History — Route 2, Guess Road

Charles E. Ferguson (1957), Ph.D.
Assistant Professor of Economics — 2108 Sprunt Street

George Burton Ferguson (1937), M.D. — 3938 Dover Road
Assistant Professor of Endoscopy and Laryngology — Hope Valley

Oliver W. Ferguson (1957), Ph.D.
Assistant Professor of English — 910 West Markham Avenue

Bernard F. Fetter (1951), M.D.
Associate Professor of Pathology — 3826 Summerset Drive

John H. Fisher (1955), Ph.D.
Professor of English — 2836 Stuart Drive

Weston Flint (1956), Ph.D.
Assistant Professor of Romance Languages — 1412 Pennsylvania Avenue

*Peter Flor (1958), Ph.D.
Research Instructor in Mathematics

Marcel Florkin (1960), M.D.
Visiting Professor of Zoology — 2148 Cranford Road

Walter L. Floyd (1959), M.D.
Associate in Medicine — 2011 Woodrow Street

* Resigned August 31, 1959.
† Absent on sabbatical leave, spring semester, 1959-60.

Donald J. Fluke (1957), Ph.D.
Associate Professor of Zoology — 2413 Wrightwood Avenue

James M. Folson (1959), B.A.
Instructor in Economics — 921 Exum Street

Wiley Davis Forbus (1930), M.D.
Professor of Pathology — 3309 Devon Road, Hope Valley

Rose Juliet Forgione (1956), R.N., M.A.
Assistant Professor of Pediatric Nursing — H-12, Westover Park Apartments

*Andrew Durwood Foster (1954), B.D., Th.D.
Associate Professor of the History and Philosophy of Religion

John Alvis Fowler (1953), M.D.
Associate Professor of Psychiatry and Pediatrics — 1504 Woodburn Road

Leonard Frederick Freiburghouse (1959), B.S., M.A.T.
Temporary Instructor in Mathematics — 3501 Duke Homestead Road

Charles F. Frenzel (1955), B.A.
Associate Professor of Hospital Administration and Superintendent of Duke Hospital — 3950 Bristol Road

Wanda Hale Friday (1959), B.A.
Computing Laboratory Instructor and Programmer in Mathematics — Box 389A, Route 1 Hillsboro Road

Irwin Fridovich (1958), Ph.D.
Associate in Biochemistry — 305 West Markham Avenue

John B. Funderburg, Jr. (1959), Ph.D.
Temporary Instructor in Zoology — 1704 Maryland Avenue

William J. Furbish (1954), B.S., M.A.
Assistant Professor of Geology — Route 1, Hillsboro, N. C.

Mercedes Gaffrom (1958), M.D., Ph.D.
Assistant Research Professor of Psychology — 2110 Wilson Street

Thomas Muir Gallie, Jr. (1954-55; 1956), Ph.D.
Assistant Professor of Mathematics — 1012 West Trinity Avenue

Clarence Ellsworth Gardner, Jr. (1930), M.D., D.Sc.
Professor of Surgery — Route 1, Hillsboro, N. C.

William Henry Gardner, Jr. (1953), B.S. in C.E., M. Eng.
Associate Professor of Civil Engineering — 1519 Woodburn Road

Norman Garmezy (1950), Ph.D.
Associate Professor of Psychology and Consultant in Medical Psychology in Department of Psychiatry — 3423 Hope Valley Road

Mrs. Ila Gehman (1959), Ed.D.
Consultant in Psychiatry and Lecturer in Psychology — 1312 Shepherd Street

W. Scott Gehman, Jr. (1954), Ph.D.
Associate Professor of Psychology in Education — 1312 Shepherd Street

Nicholas G. Georgiade (1951), D.D.S., M.D.
Associate Professor of Plastic Surgery — 2523 Wrightwood Avenue

Rhett Truesdale George, Jr. (1957), M.S.E.
Assistant Professor of Electrical Engineering — 919 Broad Street

John Jay Gergen (1936), Ph.D.
Professor of Mathematics — 2803 Nation Avenue

Hans W. Gerhard (1959), "Abitur," "Diplom rer. pol.," Ph.D.
Visiting Assistant Professor of Economics — 1410 Alabama Avenue

John S. Gillespie (1958), Ph.D.
Visiting Assistant Professor of Political Science — 803 Demerius Street

Donald Gillin (1959), Ph.D.
Instructor in History — 1806½ Shelton Street

* Resigned August 31, 1959.

Sherwood Githens (1958), Ph.D.
Lecturer in Physics — 4427 Chapel Hill Road

John Glasson (1960), M.D.
Associate in Orthopaedics — 615 Swift Avenue

Mrs. Elaine Gleason (1958-June 1959; September 1959), B.S.N.
Instructor in Nursing — 804 Louise Circle

George C. Glockler (1952), Ph.D.
Visiting Lecturer in Chemistry — 3910 Darby Road, Hope Valley

*James S. Glotfelty (1955), M.D.
Associate Professor of Psychiatry and Assistant Professor of Hospital Administration

Clarence Gohdes (1930), Ph.D.
Professor of English — 2737 Circle Drive

Joseph Leonard Goldner (1950), M.D.
Professor of Orthopaedic Surgery — 602 East Forest Hills Boulevard

Richard A. Goodling (1959), B.D., Ph.D.
Associate Professor of Pastoral Care — 1704 Sprunt Street

Craufurd David Goodwin (1959), Ph.D.
Part-time Assistant Professor of Economics — 7 Sylvan Road

Walter Gordy (1946), Ph.D., LL.D., D.H.C.
James B. Duke Professor of Physics — 2521 Perkins Road

John A. Goree (1959), M.D.
Associate in Radiology — 3817 Hillgrand Circle

Mrs. Dorothy Grant (1958), M.S.
Assistant Professor of Nursing — 106 Buchanan Boulevard

†Richard Babson Grant (1952), Ph.D.
Assistant Professor of Romance Languages — 2509 Wrightwood Avenue

Irving Emery Gray (1930), Ph.D.
Professor of Zoology — 124 Pinecrest Road

Ronald C. Greene (1958), Ph.D.
Associate in Biochemistry — 2220 Elba Street

John R. Gregg (1957), Ph.D.
Professor of Zoology — Pickett and Randolph Roads

Eugene Greuling (1948), Ph.D.
Associate Professor of Physics — 2414 Perkins Road

Egil Grislis (1959), B.D., Ph.D.
Assistant Professor of Historical Theology — 1107 Urban Avenue

Keith Sanford Grimson (1930-42; 1945), M.D.
Professor of Surgery — 3313 Devon Road, Hope Valley

Paul Magnus Gross (1919), Ph.D.
William Howell Pegram Professor of Chemistry — 3816 Dover Road, Hope Valley

Samson R. Gross (1960), Ph.D.
Associate Professor of Microbiology — 206 Swift Avenue

Julia Rebecca Grout (1924), M.S.
Professor of Physical Education — 804 Berkeley Street

Norman Guttman (1951), Ph.D.
Associate Professor of Psychology — 201 West Woodridge Drive

Ellis P. Hagler (1930)
Instructor in Physical Education — Route 1, Cornwallis Road

Herbert R. Hahn (1958), M.B.A.
Visiting Assistant Professor of Economics — Route 1, Cambridge Road

Howard N. Haines (1943), B.S.
Assistant Professor of Civil Engineering — 2732 Dogwood Road

* Resigned September 15, 1959.
† Absent on sabbatical leave, spring semester, 1959-60.

Frank Gregory Hall (1926-42; 1945), Ph.D.
Professor of Physiology and Pharmacology — 122 Pinecrest Road

*Hugh Marshall Hall (1952), Ph.D.
Assistant Professor of Political Science — 2413 Wrightwood Avenue

Kenneth D. Hall (1958), M.D.
Assistant Professor of Anesthesiology — 3804 Hillgrand Circle

Louise Hall (1931), S.B. Arch., Ph.D.
Associate Professor of Architecture — 6636 College Station

†John Hamilton Hallowell (1942), Ph.D.
Professor of Political Science — 2709 Augusta Drive

Charles F. Halsted (1958), B.A., Major, U. S. Air Force
Associate Professor of Air Science — Manchester Apartments

Edwin Crowell Hamblen (1931), M.D.
Professor of Endocrinology and Associate Professor of Obstetrics and Gynecology — 810 Forest Hills Boulevard

William Baskerville Hamilton (1936), Ph.D.
Professor of History — 2256 Cranford Road

Philip Handler (1939), Ph.D.
Professor of Biochemistry and Nutrition — 2529 Perkins Road

Frank William Hanft (1959), LL.B., S.J.D.
Visiting Professor of Law — Bowling Creek Road, Chapel Hill, N. C.

John Kennedy Hanks (1954), M.A.
Associate Professor of Music and Lecturer in Church Music — 1810 Glendale Avenue

Frank Allan Hanna (1948), Ph.D.
Professor of Economics — 2239 Cranford Road

Oscar Carl Edvard Hansen-Prüss (1930), M.D.
Professor of Medicine in Charge of Clinical Microscopy — 3303 Surrey Road, Hope Valley

*Earl Thomas Hanson (1946), Ph.D.
Assistant Professor of Political Science — 613 Swift Avenue

Laura Harbison (1958), B.S.
Instructor in Nursing — 2722 Brown Avenue

Aaren Maynor Hardee (1956), A.M.
Instructor in Romance Languages — 2417 Bruton Road

Kile Clinton Hardesty (1958), M.D.
Associate Professor of Radiology — 1007 Monmouth Avenue

Paul Hardin, III (1958), LL.B.
Assistant Professor of Law — 3327 Chapel Hill Road

‡Ellwood Scott Harrar (1936), Ph.D.
Professor of Wood Technology — 2228 Cranford Road

Paul Harrawood (1956), M.S. in C.E.
Assistant Professor of Civil Engineering — 105 West Woodridge Drive

Jerome Sylvan Harris (1936), M.D.
Professor of Pediatrics and Associate Professor of Biochemistry — 2907 Hope Valley Road

Reece T. Harris (1959), Ph.D.
Research Instructor in Mathematics — 1003 Camden Avenue

Francis Parks Harrison (1947), Ph.D.
Associate Professor of Physical Education — 2722 Circle Drive

Julian Deryl Hart (1930), M.D.
Professor of Surgery — 2324 Duke University Road

George Corbin Harwell (1935), Ph.D.
Associate Professor of English — 2115 Wilson Street

* Absent on sabbatical leave, 1959-60.
† Absent on leave, spring semester, 1959-60.
‡ Absent on sabbatical leave, fall semester, 1959-60.

Charles Roy Hauser (1929), Ph.D.
Professor of Chemistry — 1020 Rosehill Avenue

Murray Havens (1959), Ph.D.
Assistant Professor of Political Science — E23 Westover Park Apartments

Caroline Elizabeth Helmick (1949), M.D.
Associate in Preventive Medicine and Public Health and Director of Student Health, Woman's College — Infirmary, East Campus

James Paisley Hendrix (1938), M.D.
Associate Professor of Medicine and Therapeutics — 144 Pinecrest Road

Mrs. Mildred L. Hendrix (1958), B.S.
Assistant Professor of Aesthetics, Art, and Music — 144 Pinecrest Road

Simeon K. Heninger (1955), B.Litt. (Oxon.), Ph.D.
Assistant Professor of English — 702 Buchanan Boulevard

*Paul Henry (1958), Docteur es Lettres,
Visiting Professor of Philosophy

Stuart C. Henry (1959), B.D., Ph.D.
Associate Professor of American Christianity — 101 Faculty Apartments

C. Nash Herndon (1958), M.D.
Visiting Lecturer of Preventive Medicine in Genetics and Heredity — Bowman Gray School of Medicine, Winston-Salem, N. C.

Stephen Duncan Heron, Jr. (1950), Ph.D.
Assistant Professor of Geology — 1504 Anderson Street

Frederick L. Herzog (1960), B.D., Th.M., Th.D.
Associate Professor of Systematic Theology — 2936 Chapel Hill Road

Duncan Charteris Hetherington (1930), Ph.D., M.D.
Profcssor of Anatomy — K3B University Apartments

Albert Heyman (1953), M.D.
Associate Professor of Medicine — 1405 Woodburn Road

Arthur Owen Hickson (1929), Ph.D.
Professor of Mathematics — Box 27, West Durham Station

Douglas Greenwood Hill (1931), Ph.D.
Professor of Chemistry — Box 275, Route 2, St. Mary's Road

L. W. Hill (1958), B.S., Lieutenant, U. S. Navy
Assistant Professor of Naval Science — 3028 Glendale Avenue

Hans J. Hillerbrand (1959), Ph.D.
Assistant Professor of Modern European Christianity — 2207 Lafayette Street

Frederick R. Hine (1958), M.D.
Assistant Professor of Psychiatry — 2317 Prince Street

Marie Hinman (1959), M.S.
Instructor in Psychology and Director of Nursery — D-2 Westover Park Apartments

Marcus Edwin Hobbs (1935), Ph.D.
Professor of Chemistry — 115 Pinecrest Road

Clyde Hogsed (1957), M.A.
Assistant Professor of Medical-Surgical Nursing — Dogwood Acres, Box 91 Chapel Hill, N. C.

Carol Hogue (1957-58; 1960), M.S.N.
Instructor in Nursing — 3504 East Oak Drive

Leslie Benjamin Hohman (1946), M.D.
Professor of Psychiatry and Assistant Professor of Pediatrics — 1520 Hermitage Court

Clyde N. Holland (1957), B.S. in C.E.
Instructor in Civil Engineering — 314 Faculty Apartments

Irving Brinton Holley, Jr. (1947), Ph.D.
Associate Professor of History — 2506 Wrightwood Avenue

* Resigned May 31, 1959.

William Hollister (1955), M.D.
Associate in Surgery — Moore County Hospital, Pinehurst, N. C.

Frederic B.M. Hollyday (1956), Ph.D.
Assistant Professor of History — Apartment 3, 2215 Elder Street

Frances Virginia Lee Holton (1947), M.A.
Associate Professor of Physical Education — 407 Erwin Apartments

Andrew D. Hook (1959), M.A.
Temporary Instructor in English — 812 Onslow Street

Robert J. Hooper (1957), M.A., Litt.D.
Instructor in Romance Languages — 202 Faculty Apartments

Calvin Bryce Hoover (1925), Ph.D.
James B. Duke Professor of Economics — 1702 Duke University Road

Edward Charles Horn (1946), Ph.D.
Professor of Zoology — 818 East Forest Hills Boulevard

Christopher Horsfield (1959), M.A.
Temporary Instructor in Mathematics — 214 Faculty Apartments

Doris Ahlee Howell (1955), M.D.
Associate Professor of Pediatrics — 1419 Woodburn Road

*Cynthia Hudspeth (1957), R.N., B.S.N.
Instructor in Nursing

Wayland Elroy Hull (1953), Ph.D.
Assistant Professor of Physiology — 2519 Pickett Road

†Harold J. Humm (1954), Ph.D.
Associate Professor of Botany — 2528 Wrightwood Avenue

†Don Dougan Humphrey (1945), Ph.D.
Professor of Economics — 2802 Legion Avenue

Mrs. Wanda Sanborn Hunter (1947), Ph.D.
Associate Professor of Zoology — Apartment 2, 803 Lancaster Street

Allan S. Hurlburt (1956), Ph.D.
Professor of Education — 112 Buchanan Boulevard

Mary Husc (1959), Ph.D.
Associate in Medical Psychology in Department of Psychiatry and Lecturer in Department of Psychology — Ephesus Church Road

Thelma Marguerite Ingles (1949), R.N., M.A.
Associate Professor of Nursing Education and Director, Division of Nursing Education — 118 Newell Street

O. Kelly Ingram (1959), B.D.
Associate Professor of Applied Theology and Associate Dean of Students — 3705 Pendergrass Street

John Innis (1959), B.S., Captain, U. S. Air Force
Assistant Professor of Air Science — 2200 Kirkwood Drive

Ann Madeline Jacobansky (1953), R.N., M.Ed.
Professor of Nursing — 880 Louise Circle

Marianna Duncan Jenkins (1948), Ph.D.
Associate Professor of Art — 619 Morehead Avenue

Bronislas de Leval Jezierski (1958), Ph.D.
Assistant Professor of Russian Language and Literature — 3800 Hillgrand Drive

‡Frederick Charles Joerg (1947), M.B.A.
Professor of Economics — 2116 Pershing Street

Betty Sue Johnson (1955), R.N., B.S.N.E.
Instructor in Psychiatric Nursing — Ryan Road, Route 5

Charles B. Johnson (1956), Ed.D.
Assistant Professor of Education — 833 Morreene Road

* Resigned August 31, 1959.
† Absent on leave, 1959-60.
‡ Absent on sabbatical leave, 1959-60.

Gordon L. Johnson (1958), Ph.D. — Apartment C-3
Instructor in Chemistry — 808 Green Street

Terry Walter Johnson, Jr. (1954), Ph.D.
Associate Professor of Botany — 2408 Prince Street

Barney L. Jones (1956), B.D., Ph.D.
Assistant Professor of Religion — 2622 Pickett Road

*Edward Ellsworth Jones (1953), Ph.D.
Associate Professor of Psychology — 1705 Forest Road

Thomas T. Jones (1958), M.D.
Associate in Medicine — 2701 Augusta Drive

Archibald Currie Jordan (1925), M.A.
Assistant Professor of English — 147 Pinecrest Road

†Brady Rimbey Jordan (1927), Ph.D.
Professor of Romance Languages — 117 Pinecrest Road

‡Lemuel Russell Jordan (1956), M.A.
Assistant Professor of Hospital Administration and Assistant Superintendent of Duke Hospital in Charge of Out-Patient Clinic

Helen Louise Kaiser (1943), R.P.T.T.
Associate Professor of Physical Therapy — 804 Berkeley Street

William Arthur Kale (1952), B.D.
Professor of Christian Education — 500 East Markham Avenue

Mrs. Dorothy L. Kamin (1958), R.N., C.P.H.N.
Acting Instructor in Nursing — 2417 Perkins Road

Henry Kamin (1948), Ph.D.
Associate Professor of Biochemistry — 2417 Perkins Road

§Nancy Jean Kearns (1958), B.S.
Instructor in Physical Education

Thomas F. Keller (1959), Ph.D.
Assistant Professor of Economics — 1024 West Markham Avenue

Walter Kempner (1934), M.D.
Professor of Medicine — 1505 Virginia Avenue

Ronald Kenny (1958), B.S.
Instructor in Zoology — 1010 Gloria Avenue

Van Leslie Kenyon, Jr. (1945), M.M.E.
Professor of Mechanical Engineering — Route 2, Hillsboro, N. C.

Grace Pardridge Kerby (1947), M.D.
Associate Professor of Medicine — 707 Louise Circle

Alan C. Kerckhoff (1958), Ph.D.
Associate Professor of Sociology — 1921 Essex Road

Gregory Adams Kimble (1952), Ph.D.
Professor of Psychology — 2513 Wrightwood Avenue

Norman Kirschner (1956), Ph.D.
Assistant Professor of Experimental Surgery and Associate in Biochemistry — 614 North Gregson Street

Mrs. Janet Smith Kistler (1957), M.A.
Instructor in Physical Education — 703 Louise Circle

William Klenz (1947), Ph.D. — 24 Rogerson Drive
Assistant Professor of Music — Chapel Hill, N. C.

John L. Kline, Jr. (1958), B.A., Lieutenant Commander, U. S. Navy
Assistant Professor of Naval Science — 301 E. Raleigh Street, Siler City, N. C.

Peter H. Klopfer (1958), Ph.D.
Assistant Professor of Zoology — Route 1, Box 293

* Absent on sabbatical leave, 1959-60.
† Absent on sabbatical leave, fall semester, 1959-60.
‡ Resigned September 30, 1959.
§ Resigned May 31, 1959.

*William H. Knisely (1956), Ph.D.
Associate Professor of Anatomy and Assistant Professor of Medicine

Paul R. Knox (1959), M.D.
Associate in Anesthesiology — Powell Street, Chapel Hill, N. C.

Sigmund Koch (1942-47; 1948), Ph.D.
Professor of Psychology — Route 2, Durham

†Rachel Koefod (1958)
Visiting Instructor in Music

Ivo Kohler (1960), Ph.D.
Visiting Professor of Psychology — 1005 Minerva Avenue

Jack L. Kostyo (1959), Ph.D.
Assistant Professor of Physiology — #2 Carwin Apartments, 2213 Elder Street

John C. Kouns (1957), D.D.S.
Associate in Dentistry — Sourwood Drive, Chapel Hill, N. C.

Paul Jackson Kramer (1931), Ph.D.
James B. Duke Professor of Botany — 2251 Cranford Road

‡Robert Kramer (1947), LL.B.
Professor of Law — 108 Pinecrest Road

Edward Kready Kraybill (1939), M.S.E.
Associate Professor of Electrical Engineering — 2726 Circle Road

Mrs. Juanita Kreps (1955), Ph.D.
Assistant Professor of Economics — Morgan Creek Road, Chapel Hill, N. C.

§William R. Krigbaum (1952), Ph.D.
Associate Professor of Chemistry — 2015 Woodland Drive

Mary Eleanor Krummel (1958), A.M.
Instructor in Romance Languages — 2118 Englewood Avenue

Jan Magnus Krynski (1959), A.M.
Instructor in Russian — 311 West Trinity Avenue

¶George Frederic Kuder (1948), Ph.D.
Professor of Psychology — 2516 Perkins Road

Sudhir Kumar (1958), Ph.D.
Visiting Lecturer in Civil Engineering — 709 Yancey Street

Edward Charles Kunkle (1948), M.D.
Professor of Neurology — 2525 Perkins Road

Weston LaBarre (1946), Ph.D.
Professor of Anthropology — 1311 Alabama Avenue

§Creighton Lacy (1953), B.D., Ph.D.
Associate Professor of Missions and Social Ethics — 2714 Dogwood Road

Martin Lakin (1958), Ph.D.
Assistant Professor of Medical Psychology and Assistant Professor of Psychology — 1840 Forest Road

Charles Earl Landon (1926), Ph.D.
Professor of Economics — 1514 Edgevale Road

Thomas A. Langford (1956), B.D., Ph.D.
Assistant Professor of Religion — 2513 Glendale Avenue

John Tate Lanning (1927), Ph.D.
Professor of History — 3007 Surrey Road, Hope Valley

Jeanne Larkin (1958), Ph.D.
Temporary Instructor in Zoology — K-3D Duke University Road

John E. Larsh, Jr. (1943), Sc.D.
Professor of Parasitology — Memorial Hospital, Chapel Hill, N. C.

* Resigned July 31, 1959.
† Resigned May 31, 1959.
‡ Absent on leave, October 1, 1959-August 31, 1960.
§ Absent on sabbatical leave, 1959-60.
¶ Absent on leave, 1959-60.

Arthur Larson (1958), D.C.L.
Professor of Law and Director of the World Rule of Law Center — 3408 Dover Road, Hope Valley

John Laszlo (1960), M.D.
Associate in Medicine — 2218 Pratt Street

Elvin Remus Latty (1937), J.D., J.Sc.D
Professor of Law — 3620 Hathaway Road, Hope Valley

Richard H. Leach (1955), Ph.D.
Assistant Professor of Political Science — 1419 Dollar Avenue

Maurice Lesage (1959), M.D.
Associate in Experimental Surgery — Old Airport Road, Chapel Hill, N. C.

Harold Walter Lewis (1949), Ph.D.
Professor of Physics — 2307 Sprunt Street

Martha Modena Lewis (1933), M.A.
Professor of Physical Education — 407 Erwin Apartments

Ralph Elton Lewis (1941), M.S. in M.E.
Assistant Professor of Mechanical Engineering — 1401 Alabama Avenue

Donald Limoli (1958), M.A.
Instructor in History — 813½ West Knox Street

Charles Harris Livengood, Jr. (1946), LL.B.
Professor of Law — 2804 Chelsea Circle, Hope Valley

Daniel A. Livingstone (1956), Ph.D.
Associate Professor of Zoology — 816 Starmount Drive

Charles E. Llewellyn, Jr. (1955), M.D.
Assistant Professor of Psychiatry — 3525 Hamstead Court

Barry L. Logan (1958), M.A.
Instructor in English — Route 1, Ervin Circle

Arthur Hill London, Jr. (1932), M.D.
Assistant Professor of Pediatrics — 808 Wells Steeet

Ernest Croft Long (1956), M.D.
Assistant Professor of Physiology and Pharmacology and Associate in Pediatrics — Route 1, Box 204B, Erwin Road

Mildred Long (1959), M.S.W.
Associate in Psychiatric Social Work — 904 Lancaster Street

Hans Löwenbach (1940), M.D.
Professor of Psychiatry and Assistant Professor of Pediatrics — Route 3, Box 79

Charles Lucien Baker Lowndes (1934), S.J.D.
James B. Duke Professor of Law — 2016 Club Boulevard

William S. Lynn, Jr. (1954), M.D.
Associate Professor of Medicine and Associate in Biochemistry — Bristol Road, Hope Valley

Angus M. McBryde (1931), M.D.
Professor of Pediatrics — 410 East Forest Hills Boulevard

Mrs. Ella McCall (1958), M.S.
Instructor in Psychiatric Nursing — 101 West Club Boulevard

Thomas Robert McCants (1959), B.S., Commander, U. S. Navy
Associate Professor of Naval Science — 2309 Carver Street

John E. McCarthy (1958), B.S., Lieutenant Commander, U. S. Navy
Assistant Professor of Naval Science — 619 Hammond Street

Kenneth Scott McCarty (1959), Ph.D.
Associate Professor of Biochemistry — 2713 Dogwood Road

Wallace McClure (1958), Ph.D.
Consulting Director of the World Rule of Law Center and Visiting Professor of Law — 204 Faculty Apartments

*Charles O. McDonald (1956), M.A.
Instructor in English

Gelolo McHugh (1946), Ph.D.
Assistant Professor of Psychology — 1010 Monmouth Avenue

Henry McIntosh (1955), M.D.
Associate Professor of Medicine — 2406 N. Duke Street Extension

James Thomas McKeel (1956), B.E.E.
Instructor in Electrical Engineering — 2622 Charlotte Street

John C. McKinney (1957), Ph.D.
Professor of Sociology and Professor of Medical Sociology in Department of Psychiatry — 2713 Circle Drive

Mary Helen McLachlan (1957), M.A.
Associate Professor of Dietetics — 2022 Bivins Street

†Jonathon Collins McLendon (1952), Ph.D.
Associate Professor of Education

Robert M. McLeod (1955), Ph.D.
Assistant Professor of Mathematics — 4505 Duke Station

Harry Thurman McPherson (1955), M.D.
Associate Professor of Medicine — 3200 Oxford Drive

Samuel D. McPherson, Jr. (1949), M.D.
Associate in Ophthalmology — 29 Oak Drive

John Nelson Macduff (1956), M.M.E.
Professor of Mechanical Engineering — 2733 Dogwood Road

Douglas Blount Maggs (1930), J.D., S.J.D.
Professor of Law — 3940 Dover Road, Hope Valley

‡Robert A. Maguire (1958), M.A.
Instructor in Russian Language and Literature — Apartment M, 2729 Brown Avenue

Mary Catherine Male (1958), M.A.
Assistant Professor of Dietetics — 882 Louise Circle

Alan Krebs Manchester (1929), Ph.D.
Professor of History — 2016 Myrtle Drive

Clyde Leonard Manschreck (1954), B.D., Ph.D.
Associate Professor of Religion — 2403 Prince Street

§George Margolis (1947), M.D.
Professor of Pathology

Alexander R. Margulis (1957), M.D., Captain, U. S. Army
Visiting Associate in Radiology — Fort Bragg, N. C.

Joseph Eldridge Markee (1943), Ph.D.
James B. Duke Professor of Anatomy and Assistant Dean in Charge of Admissions in School of Medicine — 1015 Demerius Street

Sidney David Markman (1947), Ph.D.
Associate Professor of Art History and Archaeology — 919 Urban Avenue

§Norman Marshall (1958), Ph.D.
Associate in Physiology

¶Mrs. Shirley Martin (1959), M.S.
Instructor in Nursing

William Cary Maxwell (1930), Ph.D.
Associate Professor of German — 142 Pinecrest Road

Henry Bertram Mayo (1960), Ph.D. (Oxon.)
Visiting Professor of Political Science — 2414 West Club Boulevard

Otto Meier, Jr. (1934), Ph.D.
Professor of Electrical Engineering — 113 Pinecrest Road

* Resigned August 31, 1959.
† Resigned January 31, 1960.
‡ Absent on leave, 1959-60.
§ Resigned, June 30, 1959.
¶ Resigned, February 1, 1960.

Joan Meiller (1959), M.D.
Assistant Professor of Psychiatry — 2314 Wilson Street

Richard Meiller (1958), M.D.
Assistant Professor of Psychiatry — 2314 Wilson Street

*Gary H. Meisters (1958), Ph.D.
Research Instructor in Mathematics

Elijah Eugene Menefee, Jr. (1940), M.D.
Professor of Medicine — 2205 Cranford Road

Horst Meyer (1959), Docteur ès Sciences
Assistant Professor of Physics — 1411 Anderson Street

M. Victor Michalak (1950), A.M.
Assistant Professor of English — 2432 Wrightwood Avenue

Gustavus H. Miller (1955), Ph.D. — 70 Hays Road
Assistant Professor of Romance Languages — Chapel Hill, N. C.

†Archie E. Millis (1956), B.S.
Assistant Professor of Hospital Administration

*George J. Minty (1958), M.A.
Research Instructor in Mathematics

Carol L. Mitcham (1955), R.N., B.S. — 25 Rogerson Drive
Instructor in Obstetric Nursing — Chapel Hill, N. C.

Mrs. Jo Anne Mitchell (1959), M.S.
Instructor in Nursing — #1, Atlas Apartments

Margaret Mitchell (1957), R.N., B.S.N.E.
Instructor in Nursing — 2728 Brown Avenue

‡John Theodore Mohat (1955), Ph.D.
Visiting Assistant Professor of Mathematics

Robert John Montfort (1940), B.A.
Assistant Professor of Physical Education — 3300 Cole Mill Road

Earl George Mueller (1945), Ph.D.
Associate Professor of Art — 1108 Watts Street

Mrs. Julia Wilkinson Mueller (1939-41; 1946), M.A.
Associate Professor of Music — 1108 Watts Street

Robert J. Murphy, Jr. (1950), M.D.
Associate in Pediatrics — Hillsboro, N. C.

Thomas N. Nash, Jr. (1959), B.S. in M.E.
Instructor in Mechanical Engineering — 916 Monmouth Avenue

Blaine S. Nashold, Jr. (1957), M.Sc., M.D.
Assistant Professor of Neurosurgery — 1511 Woodburn Drive

Aubrey Willard Naylor (1952), Ph.D.
Professor of Botany — 881 Louise Circle

§Glenn Robert Negley (1946), Ph.D.
Professor of Philosophy — 3610 Hathaway Road

Dalmus Nelson (1959), Ph.D.
Visiting Assistant Profesor of Political Science — 331 Clark Street

Ernest William Nelson (1926), Ph.D. — Box 6065
Associate Professor of History — College Station

¶Karla Walter Nelson (1959), M.D.
Assistant Professor of Psychiatry and Instructor in Pediatrics

M. Wilson Nesbitt, Jr. (1957), B.D.
Assistant Professor of Church Administration — 2401 Englewood Avenue

Barbara Carol Newborg (1952), M.D.
Associate in Medicine — 1503 Virginia Avenue

* Resigned, August 31, 1959.
† Resigned, July 1, 1959.
‡ Resigned, May 31, 1959.
§ Absent on sabbatical leave, spring semester 1959-60.
¶ Resigned, December 31, 1959.

E. G. Newman (1960), M.D.
Associate in Psychiatry — 2614 Charlotte Street

Henry Winston Newson (1948), Ph.D.
Professor of Physics — 1111 North Gregson Street

Claude Nichols (1958), M.D.
Assistant Professor of Psychiatry — 1515 Woodburn Road

William McNeal Nicholson (1935), M.D.
Professor of Medicine and Assistant Dean in Charge of Postgraduate Education — 824 Anderson Street

Walter McKinley Nielsen (1925), Ph.D.
James B. Duke Professor of Physics — 139 Pinecrest Road

William C. North (1959), Ph.D., M.D.
Assistant Professor of Anesthesiology — 1514 Fir Street

Walter D. Obrist (1956), Ph.D.
Associate Professor of Medical Psychology in Department of Psychiatry and Assistant Professor of Psychology — 2521 Pickett Road

Guy Leary Odom (1943), M.D.
Professor of Neurosurgery — 2812 Chelsea Circle, Hope Valley

Daniel Alexander Okun (1957), Ph.D.
Visiting Lecturer in Civil Engineering — Dogwood Drive, Chapel Hill, N. C.

*Marion Olansky (1957), M.D.
Associate in Pediatrics

†Sidney Olansky (1956), M.D.
Associate Professor of Dermatology and Syphilology

F. Hodge O'Neal (1959), LL.B., S.J.D.
Professor of Law — 2816 Fairlawn Road

Henry J. Oosting (1932), Ph.D.
Professor of Botany — 2642 University Drive

Edward Stewart Orgain (1934), M.D.
Professor of Medicine — 3321 Devon Road, Hope Valley

Roderick B. Ormandy (1953), M.A.
Assistant Professor of Medical Speech Pathology — 14 Meadowbrook Drive

Robert Tappan Osborn (1954), B.D., Ph.D.
Assistant Professor of Religion — 216 Monmouth Avenue

Suydan Osterhout (1959), Ph.D., M.D.
Associate in Medicine and Instructor in Microbiology — 1011 Carolina Avenue

William I. O'Sullivan (1959), Ph.D.
Visiting Assistant Professor and Research Associate in Chemistry — 1507 Pettigrew Street

Athos Ottolonghi (1959), M.D.
Assistant Professor of Pharmacology — 1003 Demerius Street

John R. Overman (1955), M.D.
Associate Professor of Bacteriology and Assistant Professor of Medicine — 1107 Knox Street

Harry Ashton Owen, Jr. (1951), B.E.E., M.S.E.
Associate Professor of Electrical Engineering — 1506 Woodburn Road

John Palacios (1959), Ph.D.
Assistant Professor of Education and Senior Counselor in Bureau of Testing and Guidance — 227 Dacian Avenue

‡Aubrey Edwin Palmer (1944), B.S. in E., C.E.
Associate Professor of Civil Engineering — 2525 Highland Avenue

Harold Talbot Parker (1939), Ph.D.
Professor of History — 923 Dacian Avenue

* Resigned, September 1, 1959.
† Resigned, September 15, 1959.
‡ Absent on sabbatical leave, spring semester, 1959-60.

*Joseph B. Parker, Jr. (1953), M.D.
Associate Professor of Psychiatry and Chief of Psychiatry at Veterans Hospital

Roy T. Parker (1954), M.D.
Associate Professor of Obstetrics and Gynecology — 111 Pinecrest Road

Russell J. Parkinson (1959), M.A.
Temporary Instructor in History — 1404 Duke University Road

†Oscar A. Parsons (1954), Ph.D.
Associate Professor of Psychology and Associate Professor of Medical Psychology

Percy Herbert Partridge (1959), M.A.
Visiting Professor of Political Science — 7 Sylvan Road

Joel Francis Paschal (1954), LL.B., Ph.D.
Professor of Law — 4003 Chapel Hill Road

†Mrs. Evelyn Parker Patrick (1957), B.S.N.
Instructor in Pediatric Nursing

Ransom Rathbone Patrick (1954), Ph.D.
Professor of Aesthetics and Art — 116 Pinecrest Road

John Patton (1959), M.D.
Associate in Psychiatry — Highland Hospital, Asheville, N. C.

Lewis Patton (1926), Ph.D.
Associate Professor of English — 614 Swift Avenue

William Bernard Peach (1951), Ph.D.
Associate Professor of Philosophy — 920 Dacian Avenue

Talmadge Lee Peele (1939), M.D.
Associate Professor of Anatomy, Assistant Professor of Medicine, Assistant Professor of Pediatrics, and Lecturer in Psychology — KD2 University Apartments

Charles Henry Peete, Jr. (1953), M.D.
Assistant Professor of Obstetrics and Gynecology — 2027 Woodrow Street

William P. J. Peete (1955), M.D.
Assistant Professor of Surgery and Assistant to the Dean of the School of Medicine — 2816 Winton Road

‡Kenneth E. Penrod (1950), Ph.D.
Professor of Physiology and Pharmacology and Assistant Dean of the School of Medicine

Harold Sanford Perry (1932), Ph.D.
Associate Professor of Botany — 2302 Cranford Road

Solomon Paul Perry (1953), M.D.
Assistant Professor of Radiology — 3602 Rugby Road

Elbert Lapsley Persons (1930), M.D.
Professor of Medicine and Associate Professor of Preventive Medicine and Public Health — 723 Anderson Street

Walter Scott Persons (1930), A.B.
Associate Professor of Physical Education — 612 Swift Avenue

Ernst Peschel (1953), M.D.
Assistant Professor of Medicine — 2306 Pershing Street

Ray C. Petry (1937), Ph.D., LL.D.
Professor of Church History — 128 Pinecrest Road

Olan Lee Petty (1952), Ph.D.
Associate Professor of Education — 4505 Ryan Street

John Bernard Pfeiffer, Jr. (1949), M.D.
Associate Professor of Medicine — 3414 Rugby Road

* Resigned, August 15, 1959.
† Resigned, August 31, 1959.
‡ Resigned, June 30, 1959.

*James Henry Phillips (1946), Ph.D.
Associate Professor of Religion — 2517 Perkins Road

Jane Philpott (1951), Ph.D.
Associate Professor of Botany — 2260 Cranford Road

Henry Floyd Pickett (1935), A.B.
Associate in Medical Art and Illustration and Photographer — 1212 W. Cornwallis Road

Kenneth LeRoy Pickrell (1944), M.D.
Professor of Plastic Surgery — 3 Sylvan Road

Leo Pine (1957), Ph.D.
Assistant Professor of Microbiology — 2402 Chapel Hill Road

Jacques C. Poirier (1955), Ph.D.
Assistant Professor of Chemistry — 210 West Lavender Street

Victor Politano (1957), M.D.
Associate Professor of Urology — 2119 Pershing Street

†Amelia J. Polnik (1958), Ph.D.
Temporary Instructor in Zoology

Francis Ross Porter (1930), B.S.
Professor of Hospital Administration and Director of Duke Medical Center Foundation — Hillsboro, N. C.

Richard M. Portwood (1959), M.D.
Associate in Medicine — 1720 Vista Street

Raymond W. Postlethwait (1955), M.D.
Professor of Surgery and Chief of Surgery at Veterans Hospital — Erwin Road

Mary Alverta Poston (1930), A.M.
Associate in Bacteriology — 13 Alistair Court, Swift Avenue

*Mary Poteat (1935), Ph.D.
Assistant Professor of English — 103 Faculty Apartments

William M. Poteat (1960), B.D., Ph.D.
Associate Professor of Christianity and Culture — Greenwood Road, Chapel Hill, N. C.

Benjamin E. Powell (1946), Ph.D.
Professor in the Faculty of Arts and Sciences — 3609 Hathaway Road, Hope Valley

Thomas C. Powell (1957), B.S., Captain, U. S. Air Force
Instructor in Air Science — 1024 Gloria Avenue

Richard Lionel Predmore (1950), D.M.L.
Professor of Romance Languages — 2413 Perkins Road

Jack J. Preiss (1959), Ph.D.
Associate Professor of Medical Sociology in Department of Psychiatry and Associate Professor of Sociology in Department of Sociology — 1017 Anderson Street

James Ligon Price, Jr. (1952), Ph.D.
Associate Professor of Religion — 2723 Circle Drive

Reynolds Price (1958), A.B.
Instructor in English — Route 1, Box 263

Catherine Proctor (1958), B.S.
Instructor in Physical Education — Box 6966, College Station, 1912 House Avenue

Jesse Harris Proctor, Jr. (1958), Ph.D.
Assistant Professor of Political Science — 613 Swift Avenue

Albert Elsworth Pugh (1953), M.D.
Assistant Professor of Medicine and Chief, Professional Service, Veterans Hospital — Staff Headquarters, Veterans Hospital

Richard E. Quaintance, Jr. (1958), M.A.
Instructor in English — Apartment 4D, 944 Lambeth Circle

* Absent on sabbatical leave, spring semester, 1959-60.
† Resigned, May 31, 1959.

*Vergil Erwin Queen (1956), B.D.
Associate Professor of Church Administration

Louis D. Quin (1956), Ph.D.
Assistant Professor of Chemistry — 300 West Lavender Street

Gaylin W. Quinn (1957), D.D.S.
Associate Professor of Orthodontics — 806 East Forest Hills Boulevard

Charles William Ralston (1953), B.S., M.F., Ph.D.
Associate Professor of Forest Soils — 2531 Wrightwood Avenue

Dale B. J. Randall (1957), Ph.D.
Instructor in English — 111 Watts Street

Robert Stanley Rankin (1927), Ph.D.
Professor of Political Science — 1227 Vickers Avenue

Guy H. Ranson (1959), B.D., Ph.D.
Visiting Associate Professor of Christian and Social Ethics — 2404 West Club Boulevard

Benjamin Ulysses Ratchford (1928), Ph.D.
Professor of Economics — 133 Pinecrest Road

Esther Ratliff (1957), B.S.
Associate Professor of Dietetics — 402 Buchanan Boulevard

Israel Thomas Reamer (1931), Ph.G.
Associate in Pharmacy — 2406 West Club Boulevard

Kenneth James Reardon (1947), A.M.
Associate Professor of English — 2821 Winton Road

Robert James Reeves (1930), M.D.
Professor of Radiology — 920 Anderson Street

Edwin Kelsey Regen (1951), B.D., D.D.
Lecturer in Church Administration — 1106 Watts Street

Mrs. Wally Reichenberg-Hackett (1946), Ph.D.
Associate Professor of Psychology — College Station

†Mary Reiter (1958), M.A.
Assistant Professor of Medical-Surgical Nursing

Thomas D. Reynolds (1953), Ph.D.
Assistant Professor of Mathematics — 2502 Wrightwood Avenue

Joseph Banks Rhine (1927), Ph.D.
Director of the Parapsychology Laboratory — Route 3, Hillsboro, N. C.

‡John McFarlane Rhoads (1956), M.D.
Associate Professor of Psychiatry and Visiting Lecturer of Pastoral Care

McMurry S. Richey (1954), B.D., Ph.D.
Associate Professor of the Philosophy of Christian Education — 2725 Dogwood Road

Harold Perry Richmond (1957), B.S. in E.E.
Lecturer in Mechanical Engineering — 807 Hermitage Court

Dana Phelps Ripley (1959), M.A.
Instructor in Romance Languages — Apartment 1B, 2724 Erwin Road

Richard Risley (1958-February, 1959; September, 1959)
Instructor in Physical Education — Apartment 21E, 2723 Brown Avenue

Henry Stoutte Roberts, Jr. (1948), Ph.D.
Associate Professor of Zoology — 2527 Wrightwood Avenue

John Henderson Roberts (1931), Ph.D.
Professor of Mathematics — 2813 Legion Avenue

Herman Röbl (1959), Ph.D., Dr. habil.
Visiting Assistant Professor of Physics — 2008 West Club Boulevard

* Resigned, August 31, 1959.
† Resigned, December 31, 1959.
‡ Resigned, May 31, 1959.

Eliot H. Rodnick (1949), Ph.D.
Professor of Psychology and Consultant in Medical Psychology — 2806 Legion Avenue

Robert Samuel Rogers (1937), Ph.D., F.A.A.R.
Professor of Latin — 148 Pinecrest Road

Theodore Ropp (1938), Ph.D.
Professor of History — 302 East Woodridge Drive

Norman F. Ross (1937), D.D.S.
Assistant Professor of Dentistry — 2811 Chelsea Circle, Hope Valley

Theodore Rosett (1959), Ph.D.
Associate in Biochemistry — 1713 James Street

Robert Seaman Rowe (1956), D. Eng.
J. A. Jones Professor of Civil Engineering — 2711 Circle Drive

Donald Francis Roy (1950), Ph.D.
Associate Professor of Sociology — 604 North Gregson Street

John Jesse Rudin, II (1945), B.D., Ph.D.
Associate Professor of Speech — 1017 Rosehill Avenue

Mabel F. Rudisill (1948), Ph.D.
Associate Professor of Education — 2121 Woodrow Street

Julian Meade Ruffin (1930), M.D.
Professor of Medicine — 816 Anderson Street

Ralph Wayne Rundles (1945), Ph.D., M.D.
Professor of Medicine — 132 Pinecrest Road

James Rutherford (1959), Ph.D.
Visiting Professor of History — 2414 West Club Boulevard

Reames Hawthorne Sales (1949), B.D., Ph.D.
Assistant Professor of Religion — 2411 Prince Street

Herman Salinger (1955), Ph.D.
Professor of German — 3444 Rugby Road, Hope Valley

Herbert A. Saltzman (1957), M.D.
Associate in Medicine — 2207 Bivins Street

John Salzano (1958), Ph.D.
Assistant Professor of Physiology — 803 Starmont Drive

Karl Sandberg (1959), M.A.
Instructor in Romance Languages — 2117 Englewood Avenue

Muriel I. Sandeen (1950), Ph.D.
Assistant Professor of Zoology — 708 Louise Circle

Aaron P. Sanders (1956), M.A.
Assistant Professor of Radiology and Director of the Isotope Laboratory — 2501 Banner Street

Charles Richard Sanders (1937), Ph.D.
Professor of English — 103 Pinecrest Road

*Mrs. Eugenia Curtis Saville (1947), M.A.
Associate Professor of Music — 1103 Anderson Street

*Lloyd Blackstone Saville (1946), Ph.D.
Professor of Economics — 1103 Anderson Street

John Henry Saylor (1928), Ph.D.
Professor of Chemistry — 2500 Perkins Road

Herman Max Schiebel (1939), M.D.
Associate in Surgery — 1020 Anderson Street

†Theodor W. Schmidt (1958), Ph.D.
Visiting Assistant Professor of Mathematics

*Absent on leave, 1959-60.
† Resigned, January 31, 1959.

*Knut Schmidt-Nielsen (1952), Mag.Sc., Ph.D.
Professor of Zoology — 2524 Wrightwood Avenue

Mrs. Bodil Schmidt-Nielsen (1956), D.D.S., Ph.D.
Associate Research Professor of Zoology — 2524 Wrightwood Avenue

George C. Schoolfield (1959), Ph.D.
Associate Professor of German — 1026 West Trinity Avenue

Franz Schrader (1959), Ph.D.
Visiting Professor of Zoology and Charles W. Hargitt Senior Research Fellow — 2717 Dogwood Road

Francis Xavier Schumacher (1937), B.S.
Professor of Forestry — 6 Sylvan Road

Esther Louise Schwerman (1947), Ph.D.
Assistant Professor of English — 909 Lambeth Circle

†George William Schwert, Jr. (1946), Ph.D.
Professor of Biochemistry

William Evans Scott (1958), Ph.D.
Assistant Professor of History — 1311 Dollar Avenue

William T. Scott, Jr. (1960), B.D.
Lecturer in Divinity School — 2411 West Club Boulevard

Will Camp Sealy (1946), M.D.
Professor of Thoracic Surgery — 2232 Cranford Road

Walter James Seeley (1925), E.E., M.S.
James B. Duke Professor of Electrical Engineering — 1005 Urban Avenue

James Hustead Semans (1953), M.D.
Associate Professor of Urology — 1415 Bivins Street

Richard K. Seymour (1958), Ph.D.
Assistant Professor of German — 1311 Carolina Avenue

Fred Shabel (1957), B.A.
Instructor in Physical Education — AG-3D University Apartments

A. W. Sharer (1958), M.A.
Temporary Instructor in Zoology — 1104 Delano Street

David Shaw (1959), Ph.D.
Assistant Professor of Medical Sociology in Department of Psychiatry and Assistant Professor of Sociology in the Department of Sociology — 1210 Anderson Street

Mildred Marguerite Sherwood (1939), R.N.
Associate in Pediatric Nursing — Baker House, Duke Hospital

John Herman Shields (1926), A.M.
Associate Professor of Accounting — 1315 Vickers Avenue

Melvin G. Shimm (1953), LL.B.
Professor of Law — 2429 Wrightwood Avenue

William Warner Shingleton (1947), M.D.
Professor of Surgery — 3866 Summerset Drive

Barry Shmavonian (1958), Ph.D.
Assistant Professor of Medical Psychology in Department of Psychiatry and Lecturer in Department of Psychology — 3101½ Wake Forest Road

Joseph Robert Shoenfield (1952), Ph.D.
Assistant Professor of Mathematics — 1003 East Camden Avenue

Herbert O. Sieker (1955), M.D.
Associate Professor of Medicine — 204 Forest Wood Drive

George Addison Silver, III (1946), M.D.
Assistant Professor of Psychiatry — 3910 Dover Road

* Absent on sabbatical leave, 1959-60.
† Resigned, August 31, 1959.

Albert J. Silverman (1953), M.D.
Assistant Professor of Psychiatry — 2433 Wrightwood Avenue

Edward Christian Simmons (1947), Ph.D.
Professor of Economics — 2501 Perkins Road

Ida Simpson (1959), Ph.D.
Assistant Professor of Sociology — 31 Mount Bolus Road, Chapel Hill, N. C.

William Hays Simpson (1930), Ph.D.
Associate Professor of Political Science — 1406 Dollar Avenue

Allan P. Sindler (1959), Ph.D.
Associate Professor of Political Science — 1506 Kent Street

Leroy C. Skinner (1959), M.A.
Instructor in Physical Education — Piedmont Apartments

Albert G. Smith (1951), M.D.
Associate Professor of Pathology — 3831 Summerset Drive

C. Gaddis Smith (1958), M.A.
Instructor in History — 3122 Oxford Drive

David Tillerson Smith (1930), M.D., Litt.D.
James B. Duke Professor of Bacteriology and Associate Professor of Medicine — 3437 Dover Road, Hope Valley

Grover C. Smith, Jr. (1952), Ph.D.
Assistant Professor of English — 1109 North Gregson Street

Hilrie Shelton Smith (1931), Ph.D., D.D., Litt.D.
James B. Duke Professor of American Religious Thought — 2721 Dogwood Road

Joel Smith (1958), Ph.D.
Associate Professor of Sociology — 2211 Morehead Avenue

John B.K. Smith (1953), M.B., Ch.B., M.D.
Associate in Psychiatry — Highland Hospital, Asheville, N. C.

*Joyce Smith (1957), R.N., B.S.N.E.
Instructor in Pediatric Nursing

Peter Smith (1959), Ph.D.
Assistant Professor of Chemistry — 3115 Mossdale Avenue

†Robert Sidney Smith (1932), Ph.D.
Professor of Economics — 2236 Cranford Road

Wirt W. Smith (1957), M.D.
Assistant Professor of Experimental Surgery — 3301 Surrey Road, Hope Valley

Joachim R. Sommer (1957), M.D.
Assistant Professor of Pathology — Box 3631, Duke Hospital

Madison Spach (1957), M.D.
Associate in Pediatrics — 2016 Sunset Avenue

Dorothy Spangler (1954), B.S. M.A.
Assistant Professor of Physical Education — 8 Atlas Apartments

Cooper Phillips Speaks (1958), M.A.
Instructor in English — G3C University Apartments

Joseph John Spengler (1934), Ph.D.
James B. Duke Professor of Economics — 2240 Cranford Road

Charles D. Spielberger (1955), Ph.D.
Assistant Professor of Medical Psychology and Assistant Professor of Psychology — 1710 Forest Road

Hertha D. E. Sponer (1935), Ph.D.
Professor of Physics — 3309 Avon Road, Hope Valley

Faye Eurlene Spring (1956), R.N., M.S.
Assistant Professor of Psychiatric Nursing — 2612 Roxboro Road

Dale Fisher Stansbury (1946), J.S.D.
Professor of Law — 1008 West Trinity Avenue

* Resigned, January 31, 1960.
† Absent on leave, 1959-60.

Eugene Anson Stead, Jr. (1947), M.D.
Florence McAlister Professor of Medicine — 2122 Myrtle Drive

Robert S. Stempfel, Jr. (1957), M.D.
Assistant Professor of Pediatrics — 3439 Rugby Road, Hope Valley

Charles Ronald Stephen (1950), M.D.C.M., D.A., R.C.P.& S.
Professor of Anesthesiology and Chief Anesthetist — 1608 University Drive

Harold Patty Stephenson (1957), Ph.D.
Associate Professor of Mechanical Engineering — 818 Starmont Drive

Lionel Stevenson (1955), B.Litt. (Oxon.), Ph.D., F.R.S.L.
James B. Duke Professor of English — 3106 Devon Road

William Franklin Stinespring (1936), Ph.D.
Professor of Old Testament — 1107 Watts Street

Frederick William Stocker (1943), M.D.
Associate Professor of Ophthalmology — 1124 West Forest Hills Boulevard

Margaret Stone (1957), B.A.
Temporary Instructor in Mathematics — 101 Faculty Apartments

*Alfred W. Stonier (1958), Ph.D.
Visiting Professor of Economics and Research Associate

Howard Austin Strobel (1948), Ph.D.
Associate Professor of Chemistry — 1510 Woodburn Road

†Hans H. Strupp (1958), Ph.D.
Visiting Lecturer in Psychology

Wippert Arnot Stumpf (1948), Ph.D.
Associate Professor of Education — 127 Pinecrest Road

Charles Woodrow Styron (1946), M.D.
Associate in Medicine — 615 St. Marys Street, Raleigh, N. C.

John D. Sullivan (1958), Ph.D.
Assistant Professor in School of Forestry — 877 Louise Circle

Elizabeth Read Sunderland (1939-42; 1943), Ph.D.
Associate Professor of Art — 6416 College Station

Louis Earl Swanson (1949), A.B.
Associate Professor of Hospital Administration and Assistant Superintendent of the Hospital — 2418 Wrightwood Avenue

Rebecca Swindell (1959), M.A.
Visiting Assistant Professor of Nursing — Y-4 Country Club Homes, Raleigh, N. C.

‡Wolfgang Taraba (1956), Ph.D.
Assistant Professor of German

Haywood Maurice Taylor (1930), Ph.D.
Professor of Toxicology and Associate Professor of Biochemistry — 2620 University Drive

Kenneth John Tharp (1953), B.S. in C.E.
Assistant Professor of Civil Engineering — 2610 Acadia Street

§Joseph Miller Thomas (1930), Ph.D.
Professor of Mathematics — 2215 Cranford Road

Walter Lee Thomas, Jr. (1932-35; 1937-42; 1945), M.D.
Professor of Obstetrics and Gynecology — 3615 Dover Road, Hope Valley

Edgar Tristram Thompson (1935), Ph.D.
Professor of Sociology — 138 Pinecrest Road

Alfred Tischendorf (1955), Ph.D.
Assistant Professor of History — 416 Carolina Circle

†Raymond P. Todd (1955), B.S.E.E., Colonel, U.S. Air Force
Professor of Air Science and Tactics

* Resigned, January 31, 1959.
† Resigned, May 31, 1959.
‡ Resigned, August 31, 1959.
§ Absent on sabbatical leave, spring semester, 1959-60.

Elias Torre (1951), Doctor en Filosofía y Letras
Associate Professor of Romance Languages — 1121 Anderson Street

James Nardin Truesdale (1930), Ph.D.
Professor of Greek — 105 Pinecrest Road

Herman Turk (1959), B.S. in E.E., Ph.D.
Assistant Professor of Medical Sociology in Department of Psychiatry and Assistant Professor of Sociology in Department of Sociology — 1216 Roosevelt Drive, Chapel Hill, N. C.

*Arlin Turner (1953), Ph.D.
Professor of English — 1514 Woodburn Road

Mrs. Violet Horner Turner (1943), M.D.
Assistant Professor of Obstetrics and Gynecology — 2106 Summit Road

Richard Lovejoy Tuthill (1953), Ed.D.
Professor in the Faculty of Arts and Sciences — 2709 Dogwood Road

Malcolm P. Tyor (1955), M.D.
Associate Professor of Medicine — 922 Green Street

Luella Jane Uhrhane (1947), R.N., M.P.H.
Associate Professor of Health Education — 206 Faculty Apartments

Charles Rowe Vail (1939), M.S. in E.E., Ph.D.
Professor of Electrical Engineering — 2730 Circle Drive

†Sheila Van der Horst (1958), Ph.D.
Visiting Professor of Economics

‡Richard W. Van Fossen (1956), Ph.D.
Instructor in English

Betty Joan Van Huben (1957), M.S
Assistant Professor of Nursing — 2612 Roxboro Road

James Vander Zanden (1958), Ph.D.
Instructor in Sociology — 305 Monmouth Avenue

F. John Vernberg (1951), Ph.D.
Assistant Professor of Zoology — 803 Lancaster Street

John Verner (1958), M.D.
Associate in Medicine — 2401 Cranford Road

‡John Marcellus Vilas (1957), A.B., B.S. in E.E.
Instructor in Electrical Engineering

Patrick R. Vincent (1954), Ph.D.
Assistant Professor of Romance Languages — 1601 Bivins Street

Mrs. Christa von Roebel (1954), M.D.
Associate in Obstetrics and Gynecology — 2303 Pershing Street

Albert Edward Wackerman (1938), M.F.
Professor of Forest Utilization — 3610 Dover Road, Hope Valley

John P. Waggoner, Jr. (1957), B.S.
Assistant Professor in the Faculty of Arts and Sciences — 1017 Lakewood Avenue

Salih J. Wakil (1959), Ph.D.
Assistant Professor of Biochemistry — 889 Louise Circle

Hallam Walker (1955), Ph.D.
Assistant Professor of Romance Languages — 2716 Augusta Drive

John M. Wallace (1957), M.D.
Associate in Medicine — 1212 Virginia Avenue

Loring Baker Walton (1929), Lic. es L., Ph.D.
Professor of Romance Languages — 2235 Cranford Road

Calvin Lucian Ward (1952), Ph.D.
Assistant Professor of Zoology — K-3C University Apartments

* Absent on sabbatical leave, spring semester, 1959-60.
† Resigned, May 31, 1959.
‡ Resigned, August 31, 1959.

Charles Eugene Ward (1927), Ph.D.
Professor of English — 2429 Perkins Road

*Seth L. Warner (1955), Ph.D.
Assistant Professor of Mathematics — 4188 Duke Station

Raymond Waters (1959), B.S.
Instructor in Physical Education — 608 East Club Boulevard

Elizabeth Watling (1959), M.A.
Instructor in Nursing — Roxboro Road

George Archibald Watson, Jr. (1950), M.D.
Associate in Pediatrics — 4023 Bristol Road

Richard Lyness Watson, Jr. (1939), Ph.D.
Associate Professor of History — 109 Pinecrest Road

Vernon Elgin Way (1930), A.M.
Associate Professor of Greek — 918 Urban Avenue

Wilfred Webb (1959), Ph.D.
Visiting Associate Professor of Political Science — 923 Demerius Street

Arnold M. Weissler (1959), M.D.
Associate in Medicine — Hillgrand Circle

Henry Weitz (1950), Ed.D.
Associate Professor of Education — 2716 Circle Drive

Paul Welsh (1948), Ph.D.
Associate Professor of Philosophy — 102 Faculty Apartments

Donald L. Westfall (1957), M.A., Captain, U. S. Air Force
Assistant Professor of Air Science — 2110 North Duke Street

Joseph Cable Wetherby (1947), M.A.
Associate Professor of English — 2306 Prince Street

†Elbert Wethington (1958), Ph.D.
Visiting Lecturer in Christian Theology

Robert W. Wheat (1958), Ph.D.
Associate in Biochemistry — 2108 Summit Street

†Becky White (1957), Ph.D.
Assistant Professor of Education

Fred M. White (1959), M.F.
Instructor in Forestry and Forest Superintendent — Box 4144, Duke Station

J. Earl White (1959), M.D.
Associate in Medicine — 817 Lancaster Street

Mrs. Eugenia Remlin Whitridge (1947), Ph.D.
Assistant Professor of Sociology — Box 6935 College Station

Karl Milton Wilbur (1946), Ph.D.
Professor of Zoology — 2404 Bruton Road

Robert L. Wilbur (1957), Ph.D.
Assistant Professor of Botany — 1305 Carroll Street

Pelham Wilder, Jr. (1949), Ph.D.
Associate Professor of Chemistry — 2514 Wrightwood Avenue

Mrs. Hilda Pope Willett (1948), Ph.D.
Associate Professor of Bacteriology — 1953 Clark Avenue, Raleigh, N. C.

George Walton Williams (1957), Ph.D.
Assistant Professor of English — 619 Swift Avenue

James Wesley Williams (1937), A.B., B.S. in C.E., M.S.
Professor of Civil Engineering — South Lowell Road, Bahama, N. C.

‡Robert Marshall Williamson (1951), Ph.D.
Associate Professor of Physics — 20 Meadowbrook Drive

* Absent on leave, 1959-60.
† Resigned, May 31, 1959.
‡ Absent on sabbatical leave, 1959-60

Neil L. Wilson (1957), Ph.D.
Assistant Professor of Philosophy — 201 Faculty Apartments

Robert Renbert Wilson (1925), Ph.D.
Professor of Political Science — 717 Anderson Street

Ruby Wilson (1959), M.S.N.
Assistant Professor of Nursing — 2010 Chapel Hill Road

Thomas G. Wilson (1959), Sc.D.
Associate Professor of Electrical Engineering — 2413 Pickett Road

William R. Wilson (1959), B.D.
Instructor in Religion — Men's Graduate Center

Orval S. Wintermute (1958), B.D.
Intstructor in Religion — 1103 North Duke Street

Loren Ralph Withers (1949), M.S.
Associate Professor of Music — 2741 Dogwood Road

Cecil H. Womble (1958), Ph.D.
Instructor in Latin — 1802 Sunset Boulevard

Barnes Woodhall (1937-43; 1945), M.D.
Professor of Neurosurgery — 4006 Dover Road, Hope Valley

Frank W. Woods (1958), Ph.D.
Assistant Professor of Silviculture — 1614 University Drive

Robert Hilliard Woody (1929), Ph.D.
Professor of History — 2734 Circle Drive

Alma Lorraine Woodyard (1954), M.A.
Assistant Professor of Physical Education — 8 Atlas Apartments

Boyd T. Worde (1958), M.D.
Assistant Professor of Radiology — 504 Carver Street

Mrs. Julia Ann Hedgepeth Wray (1955), M.F.A.
Instructor in Physical Education — 819 Demerius Street

*Dewitt Wright (1943), J.D.
Associate in Hospital Administration and Assistant Superintendent of the Hospital

Donald P. Wylie (1957), M.B.A., J.D.
Visiting Assistant Professor of Mathematics — 2602 Augusta Drive

James B. Wyngaarden (1956), M.D.
Associate Professor of Medicine and Biochemistry — 1106 West Knox Street

James O. Wynn (1959), M.D.
Associate in Medicine — Route 2, Chapel Hill, N. C.

William P. Yohe (1958), Ph.D.
Assistant Professor of Economics — 2203 Englewood Avenue

James G. Yoho (1957), Ph.D.
Associate Professor of Forest Economics — 2317 Huron Avenue

Charles R. Young (1954), Ph.D.
Assistant Professor of History — 124 Andrews Road

David Bruce Young (1956), B.S. in E.E.
Instructor in Electrical Engineering — 1927 Ward Street

Helen Rose Young (1957), M.S.
Assistant Professor of Nursing — A3A University Apartments

Paul Young (1956), M.A.
Professor in the Faculty of Arts and Sciences — 1110 Shepherd Street

W. Glenn Young (1954), M.D.
Associate Professor of Surgery — 1407 Dollar Avenue

H. I. Zankel (1956), M.D.
Associate in Rehabilitation and Chief of Physical Medicine and Rehabilitation at V.A. Hospital — 123 Newell Street

* Died, August 11, 1959.

Karl Edward Zener (1928), Ph.D.
Professor of Psychology — 2727 Sparger Road

PART-TIME INSTRUCTORS

Mrs. Jean B. Anderson, M.A.
English — 2400 Chapel Hill Road

James W. Applewhite, Jr., B.A.
Graduate Tutor in English — 1211 Ruffin Street

Ozer Arnas, B.S. in M.E.
Mechanical Engineering — 1417 James Street

Edward G. Bilpuch, Ph.D.
Physics and Research Associate — Box 674, Chapel Hill, N. C.

James Boatwright, III, M.A.
Graduate Tutor in English — 208 Buchanan Boulevard

Charles Bracken, M.A.
Education — 202 Erwin Apartments

Mrs. Anne Marie Bryan, Baccalauréat, Lic. en Droit, M.A.T.
Romance Languages — 1003 South Duke Street

Thomas Bullock, M.A.
Education — 607 Maple Avenue

Leslie F. Chard, II, M.A.
Graduate Tutor in English — Box 9257, Duke Station

Mrs. Barbara Cushman, B.M.
Aesthetics, Art and Music — 2022 Myrtle Drive

Agustin Diaz, B.S.
Mechanical Engineering — Route 2, Durham

John B. F. Dice, B.S.
Mathematics — 214 Swift Avenue

Henry Nathaniel Dorris, A.B.
Electrical Engineering — 434 Hyde Street, Burlington, N. C.

Neil R. Fletcher, B.S.
Physics — 2703 University Drive

William Jackson Galbraith, B.S.
Mathematics — 2802 Legion Avenue

Nick Galifianakis, A.B., LL.B.
Economics — 308 Mallard Avenue

Joseph M. Garrison, Jr., M.A.
Graduate Tutor in English — 943½ Morreene Road

William Frank Halloran, A.B.
Graduate Tutor in English — Box 5833, Duke Station

Henry Hargreaves, M.A.
Graduate Tutor in English — 1417 James Street

Arthur Bruce Hartung, A.B.
Mathematics — Rosemary Apartments, West Rosemary Street, Chapel Hill, N. C.

Syed Z. Hasan, B.S. in M.E.
Mechanical Engineering — 1009 West Trinity Avenue

Martha E. Hester, M.A.
Graduate Tutor in English — 805½ Onslow Street

Reuben Columbus Hood, Jr., B.S.
Mathematics — 2018 Bivins Street

Norman Eugene Hoyle, M.A.
Graduate Tutor in English — 118 Pinecrest Road

Paul Joseph Hurley, M.A.
Graduate Tutor in English — F-5 Westover Park Apartments

Leonidas J. Jones, B.S. in E.E.
Electrical Engineering — Men's Graduate Center

Mrs. Carol Kaske, M.A. *English*	60 Maxwell Road, Glen Lennox Chapel Hill, N. C.
George Eldridge Keeler, B. S. *Mathematics*	2116 Pershing Street
Lungsford Richardson King, B.S. *Mathematics*	602 Buchanan Boulevard
Allen J. Koppenhaver, M.A. *Graduate Tutor in English*	T-4 Piedmont Apartments
Arthur Zoltan Kovacs, A.B. *Physics*	Men's Graduate Center
Morton Lowengrub, M.S. *Mathematics*	602 Maplewood Avenue
Eugene J. Lynch, M.A. *Physics*	716 Morreene Road
George McCelvey, M.A. *Graduate Tutor in English*	2030 Englewood Avenue
Clayton Clifton Marcy, B.S. *Mathematics*	2404 Vesson Avenue
Percy Odell Massey *Physical Education*	Hillandale Road
Eugene S. Mauney, A.B., M.M. *Aesthetics, Art and Music*	% St. Stephens Episcopal Church Goldsboro, N. C.
Jehangir Farhad Mirza, B.E. *Civil Engineering*	703 Cleveland Street
Alexander William Molina, B.S. in C.E. *Civil Engineering*	506 West Knox Street
Thomas R. Nesbitt, Jr., B.S. in C.E. *Civil Engineering*	2726 Erwin Road
Billy Brown Olive, B.S. in E.E., LL.B. *Electrical Engineering*	Route 1, Piney Mt. Road
Freida Elaine Penninger, M.A. *Graduate Tutor in English*	503 Compton Place
Theo C. Pilkington, B.E.E. *Electrical Engineering*	1311 South Miami Boulevard
Armagan Sanver, B.S. in C.E. *Civil Engineering*	1417 James Street
Lee Sayre, B.A. *Graduate Tutor in English*	Box 4755, Duke Station
Wilfred Scholfield, M.A. *Botany*	No. 12, Duke University Apartments
Francis E. Skipp, M.A. *Graduate Tutor in English*	1506 Mason Drive
Richard Staley, A.M. *Romance Languages*	1000 Lamond Avenue
William Kenneth Stars, M.A. *Aesthetics, Art and Music*	1916 Glendale Avenue
Samuel Stell, M.A. *Education*	1819 South Miami Boulevard
Wilbur C. Stewart, B.S. in E.E. *Electrical Engineering*	Men's Graduate Center
Lawrence Robert Stires, Jr., A.M. *Romance Languages*	1212 Broad Street
Dewey M. Stowers, M.A. *Economics*	Box 193, Elon College, N. C.

Lucien Edward Wagnon, B.S.
Mathematics — 936 Lambeth Circle

LeGrand Joseph Weller, Jr., B.S.
Political Science — Route 2, Farrington Road, Chapel Hill, N. C.

Mrs. Carol Wetherby, M.A.
English — 2306 Prince Street

Mrs. Alice Wilkinson, M.S.
Aesthetics, Art, and Music — 1802 Hillcrest Drive

William R. Wisseman, Ph.D.
Physics — 915 Lambeth Circle

Robert Lee Zimmerman, M.A.
Graduate Tutor in English — 2202 Lafayette Street

Educational Administration

Paul Magnus Gross, Ph.D.
Vice-President in the Division of Education — 3816 Dover Road, Hope Valley

Marcus Edwin Hobbs, Ph.D.
Dean of the University — 115 Pinecrest Road

Charles Eugene Ward, Ph.D.
Dean of Undergraduate Studies — 2429 Perkins Road

Richard Lovejoy Tuthill, Ed.D.
University Registrar — 2709 Dogwood Road

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The Divinity School

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BULLETIN

OF

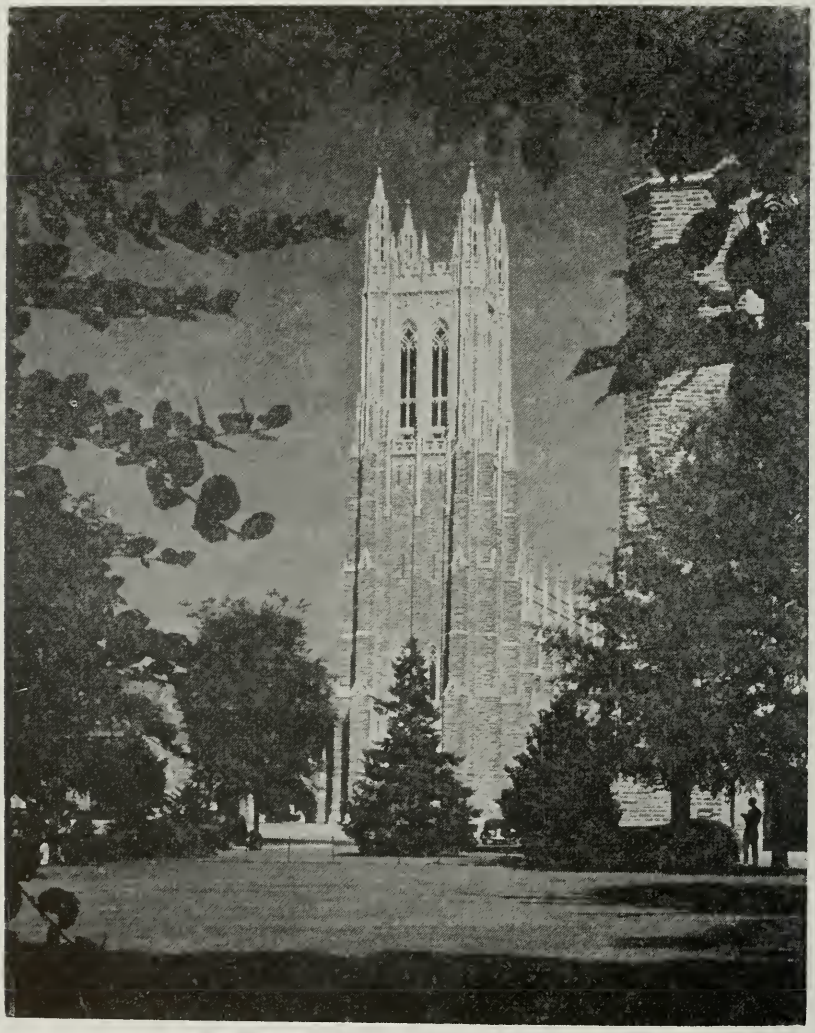
DUKE UNIVERSITY

THE DIVINITY SCHOOL

1959-60

ANNOUNCEMENTS FOR 1960-61

DURHAM, NORTH CAROLINA
1960



THE CHAPEL

Calendar



1960

September 19	Monday, 9:00 A.M.—Dormitories open for occupancy. 2:00 P.M.—Orientation for new students. 4:00 P.M.—First regular faculty meeting.
September 20	Tuesday, 9:00 A.M.-1:00 P.M.—Registration of returning students. 9:00 A.M.-12:00 M.—Photographing of new students. 9:30 A.M.-11:30 A.M.—Library tours for new students. Mr. Farris. 2:00 P.M.-5:00 P.M.—Registration of new students.
September 21	Wednesday, 9:00 A.M.-1:00 P.M.—Completion of registration. 9:00 A.M.—Briefing session for new students by Student Body Association. 9:30 A.M.-11:30 A.M.—Library tours for new students. Mr. Farris. 2:00 P.M.-5:00 P.M.—Placement tests for all new students. 6:00-7:00 P.M.—Physical examination of all new students, Duke Hospital.
September 22	Thursday, 8:10 A.M.—Classes begin for fall semester. 10:10 A.M.—Formal Opening of the Divinity School: Worship and Address.
September 26	Monday 4:00-8:00 P.M.—Christian Life Orientation Retreat.
September 28	Wednesday—Required meeting of first-year students with Dean.
September 30	Friday—Last day for changing courses for fall semester.
October 24-26	Monday, Tuesday, Wednesday—James A. Gray Lectures.
November 23	Wednesday, 1:00 P.M.—Thanksgiving Recess begins.
November 28	Monday, 12:00 M.—Classes are resumed.
December 11	Sunday—Founders' Day.
December 16	Friday, 5:30 P.M.—Christmas recess begins.

1961

January 2	Monday, 12:00 M.—Classes are resumed.
January 4, 5, 6	Wednesday, Thursday, and Friday—Registration of resident students for the spring semester.
January 13	Friday, 5:30 P.M.—Fall semester classes end.
January 17	Tuesday, 9:00 A.M.—Final examinations begin.
January 25	Wednesday—Final examinations end.
January 30	Monday—Registration of new students.
February 1	Wednesday—Spring semester classes begin.
February 10	Friday—Last day for changing courses for spring semester.
March 1	Wednesday, 7:00 P.M.—English Bible examination in Old Testament.
March 8	Wednesday, 7:00 P.M.—English Bible examination in New Testament.
March 24	Friday, 5:30 P.M.—Spring recess begins.
April 3	Monday, 12:00 M.—Classes are resumed.
May 19	Friday, 5:30 P.M.—Spring semester classes end.
May 22	Monday, 2:00 P.M.—Final examinations begin.
May 30	Tuesday—Final examinations end.
June 3	Saturday—Commencement begins.
June 4	Sunday, 11:00 A.M.—Commencement Sermon. 7:00 P.M.—Divinity School Closing Exercises.
June 5	Monday—Commencement Address, Graduating Exercises.

Officers of Administration

General Administration

Arthur Hollis Edens, Ph.D., LL.D.
President of Duke University

Paul Magnus Gross, Ph.D.
Vice-President in the Division of Education

Charles Edward Jordan, A.B., LL.D.
Vice-President in the Division of Public Relations

Herbert James Herring, M.A., LL.D.
Vice-President in the Division of Student Life

Marcus Edwin Hobbs, Ph.D.
Dean of the University

Alfred Smith Brower, A.B.
Treasurer

Gerhard Chester Henricksen, C.P.A.
Business Manager and Comptroller

John Marion Dozier, A.B.
Secretary of the University

COMMITTEE OF THE BOARD OF TRUSTEES ON THE DIVINITY SCHOOL

Charles P. Bowles, H. B. Porter,* N. E. Edgerton, E. H. Nease, Sr.

Emeriti

Franklin Simpson Hickman, (1927) A.M., S.T.B., Ph.D., D.D.
Professor Emeritus of Psychology of Religion

Hiram Earl Myers, (1926) S.T.M., D.D.
Professor Emeritus of Biblical Literature

Gilbert Theodore Rowe, (1928) S.T.D., D.D., Litt.D.†
Professor Emeritus of Christian Doctrine

Hersey Everett Spence, (1918) A.M., B.D., D.D., Litt.D.
Professor Emeritus of Religious Education

Arley John Walton, (1948) B.S.L., D.D.
Professor Emeritus of Church Administration and Director of Field Work

* Deceased, April 7, 1960.
† Deceased, February 10, 1960.

Educational Administration

Robert E. Cushman, (1945) B.D., Ph.D.
Dean of the Divinity School

Osmond Kelly Ingram, (1959) B.D.
Associate Dean of Students

Helen Mildred Kendall, (1950) A.B.
Administrative Assistant and Registrar

William Arthur Kale, (1952) B.D., D.D.
Director of Field Work

M. Wilson Nesbitt, (1958) B.D.
Associate Director of the Work of the Rural Church under the Duke Endowment

Harmon L. Smith, (1959) B.D.
Assistant to the Dean

Mattie Belle Powell, (1959)
Executive Secretary for the Work of the Rural Church

The Library

Donn Michael Farris, (1950) B.D., M.S. in L.S.
Librarian

Harriet V. Leonard, (1960) B.D., M.S. in L.S.
Reference Librarian

Jean Vickers, (1958)
Circulation Librarian

Faculty

Hugh Anderson, (1957) M.A., B.D., Ph.D.
Associate Professor of Biblical Theology

Frank Baker, (1960) B.D., Ph.D.
Lecturer in Church History

Waldo Beach, (1946) B.D., Ph.D.*
Professor of Christian Ethics

James Cannon, 1919) A.M., Th.M., D.D., LL.D.†
Ivey Professor of the History of Religion and Missions

John William Carlton, (1955) B.D., Ph.D.
Associate Professor of Preaching

Kenneth Willis Clark, (1931) B.D., Ph.D.
Professor of New Testament

James T. Cleland, (1945) M.A., S.T.M., Th.D., D.D.
James B. Duke Professor of Preaching

Robert E. Cushman, (1945) B.D., Ph.D.
Professor of Systematic Theology

Donn Michael Farris, (1950) B.D., M.S. in L.S.
Assistant Professor of Theological Bibliography

Richard A. Goodling, (1959) B.D., Ph.D.
Associate Professor of Pastoral Care

Egil Grislis, (1959) B.D., Ph.D.
Assistant Professor of Historical Theology

John Kennedy Hanks, (1954) M.A.*
Associate Professor and Lecturer in Sacred Music

Stuart C. Henry, (1959) B.D., Ph.D.
Associate Professor of American Christianity

Frederick Herzog, (1960) Th.D.
Associate Professor of Systematic Theology

Hans J. Hillerbrand, (1959) Ph.D.
Assistant Professor of Modern European Christianity

Osmond Kelly Ingram, (1959) B.D.
Associate Professor of Applied Theology

William Arthur Kale, (1952) B.D., D.D.
Professor of Christian Education

Creighton Lacy, (1953) B.D., Ph.D.
Associate Professor of Missions and Social Ethics

Thomas A. Langford, (1959) B.D., Ph.D.
Lecturer in Theology

M. Wilson Nesbitt, (1958) B.D.
Assistant Professor of the Work of the Rural Church

* On sabbatical leave, Spring Semester 1961
† Deceased, March 9, 1960

Ray C. Petry, (1937) Ph.D., LL.D.*
Professor of Church History

William Hardman Poteat, (1960) B.D., Ph.D.
Associate Professor of Christianity and Culture

Guy H. Ranson, (1959) B.D., Ph.D.†
Visiting Associate Professor of Christian and Social Ethics

Edwin Kelsey Regen, (1951) B.D., D.D.
Lecturer in the Care of the Parish

McMurry S. Richey, (1954) B.D., Ph.D.
Associate Professor of Theology and Christian Nurture

John Jesse Rudin, II, (1945) B.D., Ph.D.
Associate Professor of Speech and Worship

H. Shelton Smith, (1931) Ph.D., D.D., Litt.D.
James B. Duke Professor of American Religious Thought

Robert E. Smith, (1960) M.D.
Assistant Professor of Pastoral Care and Psychiatric Counsel

William R. Steininger, (1960) B.D., S.T.M.
Lecturer in Pastoral Care

William Franklin Stinespring, (1936) M.A., Ph.D.
Professor of Old Testament and Semitics

John Strugnell, (1960) B.A. (Oxon.), M.A. (Oxon.)
Visiting Assistant Professor of Old Testament

Herbert P. Sullivan, B.D.
Lecturer in History of Religions

Orval Wintermute, (1959) B.D., Ph.D.
Lecturer in Old Testament

James Michael Efird, B.D.
Assistant in New Testament Greek

Louis Hodges, (1957) B.D.†
Assistant in Preaching

Secretarial Staff

Joan Elmore
Secretary to the Dean

Billie Jean Berne
Secretary to the Registrar

Maureen Downey
Secretary to the Director of Graduate Studies in Religion

Rita Shumaker, A.B.
Secretary to the Associate Dean of Students

Amy Puett, A.B.
Secretary to the Director of Field Work

Faculty Secretaries
Jane Wood Jean Thorpe

* On Sabbatical leave, Spring Semester 1961
† Tenure ended August 31, 1960

Administrative and Faculty Committees

Academic Standing: Cushman, *ex officio,* Anderson, Farris, Henry, Ingram, Herzog, Kale, Stinespring, Kendall, *ex officio.*

Admissions: Cushman, *ex officio,* Carlton, Clark, Grislis, Ingram, Kale, Kendall, *ex officio,* Rudin.

Curriculum: Henry, Anderson, Petry, Poteat, Richey, Smith, Cushman, *ex officio.*

Endowment and Field Work: Nesbitt, *ex officio,* Cushman, Ingram, Kale.

Library Resources: Stinespring, Farris, Grislis, Henry, Hillerbrand, Strugnell.

Policy and Appointments: Cushman, *ex officio,* Beach, Kale, Richey, Smith, Stinespring.

Master's Program: Richey, Goodling, Poteat.

Registration Procedures: Stinespring, Ingram, Kendall, *ex officio,* H. Smith, *ex officio.*

Scholarships and Financial Aid: Cushman, *ex officio,* Ingram, Kale, Nesbitt.

Student Life and Professional Qualifications: Ingram, Goodling, Hillerbrand, Poteat, Richey, Rudin, R. Smith.

JOINT AND SPECIAL COMMITTEES

Alumni Affairs: Ingram, Clark, Kale, Rudin, H. Smith, *ex officio.*

Chapel Worship and Christian Life: Richey, Anderson, Grislis, Herzog, Rudin.

Community and Social Events: Kale, Anderson, Beach, Clark, Hillerbrand, Stinespring.

Community Life (Faculty-Student): Beach, Farris, Goodling, Henry.

Convocation: Richey, *ex-officio,* Carlton, Kale, H. Smith, *ex officio.*

Divinity School Bulletin: Lacy, Carlton, Farris, Grislis, Hillerbrand, Poteat, Strugnell.

Lectures and Public Events: Cleland, Clark, Henry, Poteat, H. S. Smith, H. Smith

James A. Gray Lectures: Cleland

Divinity School Seminars: Clark

Student Assembly Program: Poteat

Public Address: Anderson, Farris, Grislis, Hanks, Hillerbrand, Kale, H. Smith

School for Approved Supply Pastors: Kale, Ingram, Nesbitt, H. Smith, *ex officio.*

A quorum shall be sufficient to transact business of committees, or two-thirds present and voting.

General Information

HISTORICAL STATEMENT

THE Indenture of Trust signed on December 11, 1924, by Mr. James B. Duke, which established Duke University, mentioned first among its objects the training of ministers of the Gospel. The Divinity School was, accordingly, the first of the graduate professional schools to be organized. Its work began with the year 1926-27, the formal opening exercises being held on November 9, 1926.

The Reverend Doctor Edmund Davison Soper was the first Dean of the Divinity School. He resigned in 1928 to become President of Ohio Wesleyan University, and was succeeded by the Reverend Doctor Elbert Russell, and the latter in turn in 1941 by the Reverend Doctor Paul Neff Garber. In 1944, Dean Garber was elected to the episcopacy of the Methodist Church, and Doctor Harvie Branscomb assumed the duties of the Dean's office. In 1946, Dean Branscomb became Chancellor of Vanderbilt University, and in 1947 the Reverend Doctor Paul E. Root was elected Dean but died before he could assume the office. The Reverend Doctor Harold A. Bosley became Dean in 1947 and resigned in 1950 to become the pastor of the First Methodist Church, Evanston, Ill. The Reverend Doctor James Cannon was appointed Dean of the Divinity School March 1, 1951. After a period marked by important administrative integration of the School, Doctor Cannon resigned the duties of deanship, September 30, 1958. The Reverend Professor Robert Earl Cushman was elected Dean and assumed the responsibilities of the office October 1, 1958.

THE PURPOSE OF THE DIVINITY SCHOOL

The primary purpose of the Divinity School is to provide training for properly qualified persons planning to enter the Christian ministry. This includes not only prospective ministers in local churches, but also those preparing themselves to be missionaries at home and abroad, ministers of Christian Education, teachers of religion, and chaplains. Vital to all of these forms of service is a full understanding of the beginnings, content, and history of the Christian faith and its special pertinence for the spiritual needs of the modern world. Studies of a broad and thorough character directed toward such an understanding constitute the center of the curriculum of the Divinity School and are regarded as the basic training for all prospective Christian ministers. Specific instruction in the skills re-

quired of local ministers and of leaders in the work of Christian Education is also provided. As funds become available for the purpose and as needs appear, additional training in specialized skills and areas of knowledge will be added to the curriculum.

Bound by ties of history and obligation to The Methodist Church, the Divinity School is ecumenical in its interests and outlook. Its faculty is limited to no one denomination, but draws upon the resources of them all. Students of the several denominations are admitted on the same basis. The Divinity School conceives its task to be one of broad service to the Church in all of its forms.

THE RELATION OF THE DIVINITY SCHOOL TO DUKE UNIVERSITY

The Divinity School is an integral unit of the University and shares fully in its activities, privileges, and responsibilities. The Sunday services in the University Chapel give Divinity School students an opportunity to hear each year a number of leading ministers of the country. The University Libraries make easily accessible a rich collection of 1,275,000 volumes. Selected courses in the Graduate School of Arts and Sciences and in the professional schools are open to Divinity School students without payment of additional fees. The general cultural and recreational resources of the University are available to them on the same basis as to other students.

LIBRARY RESOURCES

The Divinity School has its own recently remodelled Library containing over ninety-four thousand volumes. It is rich in complete files of the more important religious journals and periodicals, in source materials, particularly for the study of medieval and American church history, Judaism, missions and the history of religion, and in facsimiles of the more important manuscripts of the New Testament. Among the most treasured possessions of the Library are twenty-four Greek manuscripts of the eleventh to seventeenth centuries. Fifteen are Greek New Testament, of which one is a magnificent manuscript of the thirteenth or fourteenth century, containing the entire text of the New Testament; four are liturgical manuscripts containing material valuable for studies in the New Testament and church history.

The combined libraries of the University contain over 1,425,000 volumes. The General Library of the University is connected by a corridor with the Divinity School Building. It contains more than eight hundred ninety thousand volumes and receives the current issues of over four thousand periodicals, more than two hundred and ninety of which are in the field of religion. The General Library con-

tains also a catalogue of the Library of the University of North Carolina located at Chapel Hill, twelve miles away, and a system of exchange operates between the two libraries, so that books may be secured from that Library also within a few hours.

The Henry Harrison Jordan Loan Library was endowed in 1947 by the children of the late Reverend Henry Harrison Jordan, for the purpose of providing ministers in the field with the best of current religious literature. This collection was an outgrowth of the Duke Divinity School Loan Library established in 1944.

RELIGIOUS LIFE

One of the most important aspects of a program of training for Christian service is warm and discriminating common prayer. The center of the corporate life of the Divinity School is its own place of worship, York Chapel. Regular chapel services are held, at which all students are expected to be present. Services are led by members of the faculty, by visiting ministers, and by members of the student body. Prayer groups are held in the dormitories weekly and special groups during the Lenten Season. A Retreat is held each year. Ordination and other special services are held upon occasion. On each Sunday morning services are held in the University Chapel.

DIVINITY SCHOOL CHOIR

A student organization of long standing is the Divinity School Choir. Membership in the Choir is open to all qualified students. The Choir sings regularly for the daily services in York Chapel and at special seasonal programs and services. New members are chosen by informal auditions held during the first week of fall classes. All interested are invited to try out.

PUBLIC LECTURES

The policy regarding Public Lectures in the Divinity School has been revised, and each public lecture—James A. Gray, Duke Seminars, Missions Emphasis Week, Hickman Preaching Award, Student Forums, and others—has been placed under the guidance of a special committee in an effort to time, space, and coordinate all special lectures during the academic year. The lecturers and their subjects for the year 1959-60 were: Professor John Bright, of Union Theological Seminary, Richmond, Virginia, "The Authority of the Old Testament in Preaching"; Professor Alexander J. Boyd, of the University of North Carolina, "Christianity in the Indian Situation"; Professor J. S. Whale, of Oxford University, "Our Rediscovery of Satan"; Dr. Clarence Jordan, of Koinonia Farm, Americus, Georgia, "The Church as Koinonia"; Bishop Odd Hagen, Stockholm, Sweden, "Protestant Christianity in the Scandinavian Situation."

THE DIVINITY SCHOOL LIBRARY LECTURES

In 1948 the Duke Divinity School Library Lectures were established by the Reverend George Brinkmann Ehlhardt for the purpose of bringing to the Divinity School a succession of religious leaders. This lectureship has an honored place in our calendar. No lecturer for 1960-61.

THE JAMES A. GRAY LECTURES

The James A. Gray Lectures were established in 1950 as part of the fund set up in 1947 by Mr. James A. Gray of Winston-Salem, North Carolina. For many years this lectureship was delivered in connection with The Ministers' Convocation; but more recently it has been established as part of the regular academic year in the Divinity School, for the benefit of faculty, students, and returning alumni. The lecturer in 1960-61 will be Dr. Jaroslav Pelikan, Professor of Historical Theology of the Federated Theological Faculty of the University of Chicago. The lectures will be delivered October 24-26, 1960.

A CLINIC IN PREACHING

A Clinic in Preaching will be offered in the summer of 1961 under the direction of Professors James T. Cleland and John W. Carlton for twenty ministers who have graduated from theological school before 1956. No academic credit will be given.

COURSES OF STUDY OFFERED BY THE DIVINITY SCHOOL

The Divinity School offers three courses of study. The basic course is that which leads to the degree of Bachelor of Divinity. This is a three-year course and is recommended to all those preparing themselves for the work of the parish ministry. Students who hold pastoral charges, or other remunerative work requiring any substantial time apart from their studies, may carry only reduced schedules of work, and, in most cases, unless work is taken in the Duke University Summer Session, will spend four years in completion of the requirements for the B.D. degree.

The Divinity School offers study leading to the degree of Master of Religious Education. This course is designed for persons who wish to take specialized positions in the work of Christian Education. The course does not provide a general preparation for the work of the regular ministry and cannot serve as a substitute for it. No exchange of credits between the two courses is permitted, nor can departmental courses taken be credited toward more than one degree.

A new program of study leading to the degree of Master of Theology (Th.M.) will be instituted in the academic year 1960-1961. This course is planned to afford a limited number of superior stu-

dents an opportunity for intensive theological study beyond the B.D. degree. It is a terminal professional degree, ordinarily to be completed in a year, and not to be regarded as leading toward a doctorate.

The requirements for each of these degrees are stated on pages 20 through 30 of this catalogue.

COURSES OF STUDY IN RELIGION OFFERED BY THE GRADUATE SCHOOL OF ARTS AND SCIENCES

Students who desire to pursue studies in religion leading to the degrees of Master of Arts or Doctor of Philosophy in Religion should register in the Graduate School of Arts and Sciences. This advanced work is administered through the Department of Religion of the Graduate School and is available to qualified persons of all denominations on an equal basis. Study and research may be pursued in three fields: (1) Biblical Studies; (2) Historical Studies, and (3) Systematic and Contemporary Studies. A list of courses approved by the Graduate Faculty for work in these fields, together with general requirements for admission to the Graduate School, may be found in the *Bulletin of the Graduate School.* This Bulletin is available on application to the Dean of the Graduate School of Arts and Sciences, Duke University.

A limited number of University Scholarships and Fellowships, among which are four Gurney Harriss Kearns Fellowships, ranging from $1,600 to $2,000 may be obtained by exceptionally qualified students. Applications for these must be submitted to the Dean of the Graduate School on University forms not later than March 1 of each year.

Inquiries concerning specific requirements of the Department of Religion in the Graduate School should be addressed to Professor Waldo Beach, Director of Graduate Studies in Religion.

DEMPSTER GRADUATE FELLOWSHIPS

The Methodist Board of Education offers each year the Dempster Graduate Fellowships for graduates of Methodist Theological Schools, who are engaged in programs of study leading to the degree of Doctor of Philosophy in Religion with a view to teaching in Methodist colleges and seminaries. Several Divinity School graduates have held these fellowships.

FACILITIES FOR ADVANCED STUDY IN THE AMERICAN SCHOOLS OF ORIENTAL RESEARCH

The Divinity School of Duke University is one of the supporting members of the American Schools of Oriental Research. Accordingly, students in the Divinity School have the privilege of attending the

American School in Jerusalem or the one in Bagdad without charge for tuition. They may also compete for the financial aids which are offered annually by the Schools. These consist of four fellowships, the stipends depending upon available funds.

DIVINITY SCHOOL SEMINARS

The Divinity School, under provision of the James A. Gray fund, conducts each year two extension seminars providing two-day study courses for ministers. In 1959-60 seminars were conducted at the First Methodist Church of Salisbury, N. C. and the First Methodist Church of Wilson, N. C. Lecturers were Dr. William H. Kirkland, Professor of the Philosophy of Religion in McCormick Theological Seminary, the Reverend Gaylord B. Noyce, minister of the United Church, Raleigh, N. C., and Dr. Waldo Beach, Professor of Christian Ethics in the Duke Divinity School.

SCHOOL FOR APPROVED SUPPLY PASTORS

In cooperation with the Department of In-Service Training of the Board of Education and the Southeastern Jurisdictional Conference of the Methodist Church, the Divinity School conducts a School for Approved Supply Pastors of the Methodist Church. The School for 1960 is scheduled for July 18-August 12.

STUDENT GOVERNMENT ASSOCIATION

Each student of the Divinity School upon enrollment becomes a member of the Student Government. Four officers are elected annually in April to serve for the following year. These officers, the President, Vice-President, Secretary, and Treasurer, serve as the Executive Committee, and the committee chairmen constitute the Student Council, which meets in monthly session to review and coordinate the programs of the several committees. It is desired that students contribute to the corporate life of the School through active participation in the work of the committees. The Student Association operates on the basis of a unified budget, each student contributing to its support dues set by the Executive Committee, which for the past several years have been in the amount of $5.00 per year, payable at the time of fall registration; $2.50 at spring registration for students who enter at that time.

Student committees organize and supervise social projects and missions of preaching, jail visitation, and related enterprises. Opportunities for occasional preaching are always available.

STUDENT PUBLICATIONS

The Divinity School student body sponsors and publishes a faculty and student *Directory,* and a monthly paper entitled, *Response.*

DIVINITY DAMES

The wives of Divinity School students have an organization through which there is opportunity for informal fellowship during the period of the students' residency. For the past several years lecture courses, running for five-week periods in the fall and spring semesters, have provided instruction in various aspects of parish life and in theological and Biblical subjects and issues. The dean and faculty are concerned to assist the wife to understand her husband's vocation and to participate appropriately.

Admission and Requirements for Degrees

Requirements for Admission

THE Divinity School is a fully accredited member of the American Association of Theological Schools, and is one of twelve accredited seminaries of the Methodist Church. Candidates for admission must hold the degree of A.B., or its equivalent, based upon four years of work beyond secondary education, in a college which is approved by one of the regional accrediting bodies, and their college records must be such as to indicate their ability to carry on graduate professional studies. They will be admitted without examination on presentation of an official, satisfactory transcript of college and all other academic credits which they may have secured. Recommendations from five responsible persons are required. Women will be admitted on the same basis as men.

Applications may be rejected where transcripts show a considerable number of low grades even though the applicant may have eventually received a degree. Papers filed with applications are not returned.

It is desirable that each applicant for admission show a "B" average in his college work. An average of less than "B—" is, normally, not considered sufficient for admission.

The applications of students from foreign countries will be considered, each on its own merits, the general principle being that a training equivalent to that of a baccalaureate degree from an accredited American college must have been secured.

In addition to an adequate academic preparation, applicants must satisfy the Faculty as to their Christian character and purpose. A formal application blank may be secured from the office of the Divinity School. This must be filled out and returned by all candiates for admission. Application for admission should be made during the first semester of the applicant's senior year in college. Applications received after April 1 cannot be assured of admission, financial aid or dormitory rooms for the ensuing academic year. A minimum of thirty days is required to process any application.

All persons admitted to the Divinity School are required to report to the Student Health Service, Duke Hospital, for physical examination on days and at hours specified at the time of matriculation. No

admission is final until approved by the Student Health Service, which may require submission of a health certificate prior to arrival of prospective students. Applicants are also required to take certain tests administered by the Bureau of Testing and Guidance.

Persons who do not matriculate at the time for which they were originally admitted forfeit admission and must be formally re-admitted A student who withdraws from the Divinity School and desires to return at a later date must file with the Dean a written request for a leave of absence.

The number of applications for admission to the School is considerably larger than the number of vacancies. In view of this fact, applicants are required on notification of admission to signify their acceptance within two weeks, and to pay an admission fee of $30.00 (Make check payable to Treasurer of Duke University and send to the Office of the Dean of the Divinity School.) This fee is applied to the regular first-term bill if the student matriculates; if he fails to do so, the fee is forfeited. This does not apply to the Summer Session.

Under the terms of the Selective Service Act, as it now stands, pre-enrollment for later formal admission may be granted to persons who meet the Divinity School standards and requirements for admission. Applications for pre-enrollment may be addressed to the Office of the Dean. Pre-enrolled students must send transcripts of each year's college work by June 15th of each year in which they are pre-enrolled. *Pre-enrollment does not guarantee final admission,* and a person who has been pre-enrolled for any length of time must send a transcript of work by February 1 of the year in which admission is sought for the ensuing academic year. This must be accompanied by a letter from the college dean or other approved reference certifying to continued academic acceptability, good character and conduct. The admission fee of $30.00 is due within two weeks of receipt of notice of final admission.

ADVANCED STANDING

Transfer of credit from theological schools recognized by the American Association of Theological Schools is provided for by the Faculty of the Divinity School under certain conditions. Applications for transfer of credit will be ruled upon by the Committee on Admissions, and will be subject to evaluation in terms of the prevailing requirements of the Divinity School for graduation. Ordinarily credit from another institution will not be granted in amount exceeding one half of the total credits required by the Divinity School for graduation. A student applying for transfer of credit in excess of this amount may be required to pass such examinations as the Committee on Admissions may prescribe. In each case a letter of honorable dis-

missal from the school from which transfer is made is required along with transcript of academic credits.

Entering students with exceptional undergraduate preparation, may seek advanced standing by substitution of advanced or specialized courses for certain required courses. *Petition for substitution must be submitted with the application for admission to the Committee on Admissions.* Courses for which substitution is sought must be specified. Provision is made during the orientation period for students who seek such substitution to take qualifying examinations. These may be taken in no more than three of the following areas:

(a) Old Testament
(b) New Testament
(c) Types of Religious Philosophy
(d) Speech

A student who has not less than three semester hours of college credit, with a grade of "B" or better in one or more of these areas *and* whose performance on the qualifying examination is satisfactory, may be permitted to satisfy the basic requirement by substituting an advanced or more specialized course in the same or cognate area.

For O.T. 11 (101, 196, 197, 201-102)
For N.T. 18 (103-104, 105, 109, 116, 217 or equivalent)
For Types of Religious Philosophy (16 Contemporary Western Culture)
For Ministerial Communication 17 (134, 178, 180) *

Unless all the work offered for the B.D. degree is completed within a period of nine years from the date of beginning, the student will be required to make formal application for re-admission and re-evaluation of his credits in the light of the then-existing curriculum of the Divinity School. Except in unusual cases, work of a fragmentary character taken over a long period of years, or work taken many years before a student is admitted to the Divinity School, will not be accepted for credit toward the B.D. degree.

ADMISSION ON PROBATION

1. Applicants for admission who are graduates of non-accredited colleges will be considered on their merits. Ordinarily, such applicants must show that they have attained a superior average for a four-year college course.

Admission of such persons will, in every case, be *on probation.*

* Students seeking permission to substitute a more advanced course for Ministerial Communication 17 must qualify by passing the Divinity School Platform Test under conditions described in the section stating requirements for the Bachelor of Divinity degree.

2. Applicants for admission who are graduates of accredited colleges but whose college transcripts do not fully meet Divinity School standards may also be admitted *on probation* if their recommendations justify consideration.

Probation means:

a. Students who, during the first year of Divinity School work (thirty semester hours), maintain a low average, including one or more failures, will be required to withdraw from the school.

b. Students admitted on probation may carry only limited schedules of work, the amount to be determined by the Dean of Students.

c. In the case of a student admitted on probation, no credit will be granted for any course in which, during the first year's work (thirty semester hours), a grade of less than "C" is recorded, unless the student's entire average in the year during which a "D" grade is received is "C" or better.

d. When the student has been admitted on probation, and is subsequently found to be deficient in the essential requisites of any given area of the "Pre-Seminary Curriculum" (see next section of catalogue), the Divinity School Faculty reserves the right to direct that the student make up such deficiencies by additional courses of study taken in other schools of Duke University in order to qualify for either the B.D. or M.R.E. degree, but without credit for such courses toward those degrees.

Students whose work after admission is not satisfactory may be placed on probation for one or more semesters and may be denied credit for courses in which "D" grades are recorded.

PRE-SEMINARY CURRICULUM

The Divinity School, in substantial agreement with the standards of the American Association of Theological Schools, recommends that prospective candidates for admission keep in mind the desirability of including the following in their undergraduate curriculum:

It is suggested that a student should acquire a total of 90 semester hours or complete approximately three-fourths of his college work in the areas listed below. No work done towards a first college degree may be used toward a Divinity School degree.

Basal Fields	*Semesters* (At least the number indicated)
English Literature, composition and speech, and related studies	6
History, ancient, modern European, and American	3
Philosophy, orientation in history, content and method	3
Religion	3
Psychology	1
A foreign language Greek, Latin, Hebrew, French and German are especially recommended.	4

Requirements for the Degree of Bachelor of Divinity

The requirements stated in Section I below apply to all students who entered the Divinity School after June 1, 1959.

(For those graduating under the catalogue of 1958-59 the catalogue of that year may be consulted or mimeographed statements are available in the Dean's Office.)

REQUIREMENTS FOR THE JUNIOR YEAR

I. Required Courses, to be taken by all candidates for the B.D. degree.

P.S. 10. 1. The Church and the Minister's Vocation	2 s.h.
O.T. 11. Introduction to the Old Testament I	3 s.h.
C.H. 13. History of the Church to the Protestant Reformation	3 s.h.
C.H. 14. History of Modern European Christianity	3 s.h.
C.T. 16. Contemporary Western Culture	3 s.h.
(Alternate option for T.S. 20 if a student has had 6 hours of History of Philosophy and/or Philosophy of Religion in College.)	
Speech 17. Ministerial Communication	2 s.h.
N.T. 18. Early Christian Life and Literature	3 s.h.
T.S. 20. Types of Religious Philosophy	3 s.h.
H.T. 21. Theology of the Protestant Reformation	3 s.h.
P.C. 26. II. Introduction to Pastoral Care	3 s.h.
Field Work Practicum for Student Pastors	
Field Work Practicum for Endowment Students	

Professional Courses I and II required of all students.

REQUIREMENTS FOR THE MIDDLE YEAR

(New Program)

O.T. 12. Introduction to the Old Testament II	3 s.h.
N.T. 19. Introduction to New Testament Theology	3 s.h.
C.Ed. 22. IV Theology and Christian Nurture	3 s.h.
H.R. 24. Philosophy of the Christian World Mission	2 s.h.
C.E. 27. Christian Ethics I	3 s.h.
A.C. 28. History of American Christianity	3 s.h.
Pr. 29. III Sermon Construction—Theory	2 s.h.
Pr. 30. V Sermon Construction—Practice	2 s.h.
C.T. 32. Christian Theology I.	3 s.h.
C.T. 33. Christian Theology II.	3 s.h.

Note: Professional Course III, required of Vocational Groups 1, 3, 4.

Professional Course IV, required of all students in Vocational Groups 1, 2, 3.

Professional Course V, required of all students in Vocational Groups 1, 3, 4.

Philosophy of Christian World Mission required of Vocational Groups 1, 2, 3.

REQUIREMENTS FOR THE SENIOR YEAR

(New Program)

C.A. 23. VI The Care of the Parish	3 s.h.
Pr. 31. VIII Preaching (practice)	1 s.h.
W.C. 40. VII The Church at Worship	3 s.h.

Note: Professional course VI is required of students in Vocational Groups 1, 2, 3.

Professional course VII is required of students in Vocational Groups 1, 2, 4.
Professional course VIII is required of students in Vocational Group I.
(Roman numerals show Vocational Groups for which the course is required)

II. Vocational Groups
Each student, not later than the end of the junior year, will choose one of the five Vocational Groups listed on page 25 and will meet the vocational requirements of the group chosen.

III. Senior Seminars.
Each student will elect one of the Senior Seminars listed on page 42.

IV. Free Electives.
The student will choose a sufficient number of courses to make up the total of 90 semester hours required for graduation. Language courses count as free electives.

V. English Bible. Demonstration of a detailed knowledge of the contents of the narrative portions of the English Bible. Examinations for this purpose in Old and New Testament are given each spring. (See Calendar for exact dates.)

VI. The Platform Test. In addition to passing the course, Ministerial Communication 17, each candidate is required to pass a Platform Test, taken before a panel of at least three instructors of the faculty who are appointed by the Dean to evaluate student competence in public address and diction. The test includes oral reading from and verbal commentary on an assigned passage of scripture together with such other reading as may be assigned at the time of the test. The tests are scheduled by the Dean's office, normally at an early date in the Spring Semester. Students failing the Platform Test are assigned to a program for remedial speech. Speech 34 is provided as a practice speaking and reading workshop for cultivating correct English diction and providing experience in communication.

Students who show deficiencies in English will be required to take special training in addition to meeting the other requirements for the degree. A degree may be withheld on the grounds of English deficiency.

FACULTY ADVISORS

Each entering student is assigned to a Faculty Advisor at the time of registration and must report to his Advisor. A student must consult with his advisor in order to determine his course and cannot complete his registration without the signature of his advisor. It is understood that all students will continue to consult their advisors at the time of registration throughout the period of their academic work.

Suggested Distribution by Semesters of Required Courses

FIRST (JUNIOR) YEAR

First Semester	*Semester Hours*
Required in this Semester	
10. I The Church and Minister's Vocation	2
11. Introduction to the Old Testament I	3
13. History of the Church to the Protestant Reformation	3
17. Ministerial Communication	2
20. Types of Religious Philosophy*	3
Field Work Practicum I (Student Pastors)	1

15 hours is the normal program, not over 16 hours may be scheduled.

Second Semester	*Semester Hours*
Required in this Semester	
14. Modern European Christianity	3
18. Early Christian Life and Literature	3
21. Theology of the Protestant Reformation	3
26. II Introduction to Pastoral Care	3
Field Work Practicum II (Summer Field Work)	1
English Bible Examinations	0

15 hours is the normal program, not over 16 hours may be scheduled.

* Required of all students with less than 6 hours of History of Philosophy and/or Philosophy of Religion in college. If student is deemed suitably prepared, he may enroll in *Contemporary Western Culture* (16) as his alternate option.

SECOND (MIDDLE) YEAR

First Semester	*Semester Hours*
Required in this Semester	
19. Introduction to New Testament Theology	3
24. Philosophy of the Christian World Mission†	2
29. III Sermon Construction—Theory	2
32. Christian Theology	3
28. History of American Christianity	3

Second Semester	*Semester Hours*
Required in this Semester	
12. Introduction to the Old Testament II	3
22. IV Theology and Christian Nurture	3
27. Christian Ethics I	3
30. V Sermon Construction—Practice	1
33. Christian Theology	3

Professional Courses I and II required of all students.
Professional Course III, required of Vocational Groups 1, 3, 4.
Professional Course IV, required of all students in Vocational Groups 1, 2, 3.
Professional Course V, required of all students in Vocational Groups 1, 3, 4.
†Required of students in Vocational Groups 1, 2, 3.

THIRD (SENIOR) YEAR

First Semester	*Semester Hours*
Required in this Semester	
23. VI The Care of the Parish	3 s.h.
31. VIII Preaching (Practice)	1 s.h.
40. VII The Church at Worship	3 s.h.

Note: Professional course VI is required of students in Vocational Groups 1, 2, 3.
Professional course VII is required of students in Vocational Groups 1, 2, 4.
Professional course VIII is required of students in Vocational Group 1.

Schedule of Required Courses

(New Program)

FIRST YEAR—FIRST SEMESTER

Hour	*Monday*	*Tuesday*	*Wednesday*	*Thursday*	*Friday*	*Saturday*
8:10		*Speech 17		*Speech 17		
9:10		I P. S. 10		I P. S. 10		
10:10		Chapel	Chapel	Chapel	Chapel	
11:00		C. H. 13	Assembly	C. H. 13	C. H. 13	
12:00	§C. T. 16 T. S. 20		§C. T. 16 T. S. 20		§C. T. 16 T. S. 20	
2:00	O. T. 11	†Practicum	O. T. 11		O. T. 11	

FIRST YEAR—SECOND SEMESTER

Hour	*Monday*	*Tuesday*	*Wednesday*	*Thursday*	*Friday*	*Saturday*
8:10						
9:10		C. H. 14	C. H. 14		C. H. 14	
10:10		Chapel	Chapel	Chapel	Chapel	
11:00		N. T. 18	Assembly	N. T. 18	N. T. 18	
12:00	H. T. 21		H. T. 21		H. T. 21	
2:00	II P. C. 26	‡Practicum	II P. C. 26		II P. C. 26	

* Additional sections of Speech are available.
† For Student Pastors, additional sections of Practicum are available.
‡ For Duke Endowment Students, additional sections of Practicum are available.
§ Types of Religious Philosophy required of all students with less than 6 hours of History of Philosophy and/ or Philosophy of Religion in college. If the student is deemed suitably prepared, he may enroll in *Contemporary Western Culture* (C. T. 16) as his alternate, at the same hour.
Professional Courses I and II required of all students.

SECOND YEAR—FIRST SEMESTER

Hour	*Monday*	*Tuesday*	*Wednesday*	*Thursday*	*Friday*	*Saturday*
8:10						
9:10		C. T. 32	C. T. 32		C. T. 32	
10:10		Chapel	Chapel	Chapel	Chapel	
11:00		A. C. 28	Assembly	A. C. 28	A. C. 28	
12:00		III Preaching 29		III Preaching 29		
2:00	N. T. 19	Missions 24	N. T. 19	Missions 24	N. T. 19	

SECOND YEAR—SECOND SEMESTER

Hour	*Monday*	*Tuesday*	*Wednesday*	*Thursday*	*Friday*	*Saturday*
8:10						
9:10		C. T. 33	C. T. 33		C. T. 33	
10:10		Chapel	Chapel	Chapel	Chapel	
11:00		C. E. 27	Assembly	C. E. 27	C. E. 27	
12:00		V Preaching 30	IV C. Ed. 22		IV C. Ed. 22	
2:00	IV C. Ed. 22		O. T. 12		O. T. 12	
3:00	O. T. 12					

Note: Professional Course III, required of Vocational Groups 1, 3, 4.
Professional Group IV required of all students in Vocational Groups 1, 2, 3.
Professional Group V required of all students in Vocational Groups 1, 3, 4.
Philosophy of Christian World Mission required of Vocational Groups 1, 2, 3.

THIRD (SENIOR) YEAR

Vocational Groups. One of these will be chosen by every B.D. candidate not later than the end of the Junior year.

The student will also elect one Senior Seminar: he may not take more than one without special permission of the Dean. The Seminar will carry credit of two semester hours.

Electives in sufficient amount to complete 90 hours for graduation will be taken.

I. THE PARISH MINISTRY

A student electing Vocational Group I shall plan his program to include one course at a level higher than the core requirement from each of the following areas:

Biblical Studies	Pastoral Ministry
Care of the Parish	Preaching or Worship
Christian Education	Theological Studies
Historical Studies	

This Vocational Group requires the following Professional Courses: III, IV, V, VI, VII, VIII, and Philosophy of Christian World Mission.

II. CHRISTIAN EDUCATION.

A student should plan his courses so as to include three of the following Christian Education courses: 125, 126, 161, 162, 169 and at least one course from among the following: 164, 165, 166. In addition the student should take one advanced course in the following fields: Christian Theology, Bible, American Christianity, Historical Theology or Church History, Christian Ethics, Pastoral Care, and Worship.

This Vocational Group requires the following Professional courses: IV, VI, VII, and Philosophy of Christian World Mission.

III. MISSIONS.

The student should plan his program so as to include: Missions 24 and 133, one course in the History of Religion, one course in Christian Ethics; plus such courses as may be recommended by the instructor in Missions on the basis of each student's needs, interests, and previous choices.

This Vocational Group requires the following Professional Courses: III, IV, V, VI, and Philosophy of Christian World Mission.

IV. THE MINISTRY OF PASTORAL CARE.

In addition to the required course in the Pastoral Ministry, P.M. 26, the student should plan his program so as to include eight courses as follows: P.M. 170; either 171 or 172; 177; either 174 or 188; Christian Education 125; Historical Theology 121 or 123, or one course in Church History; one elective course in Philosophy of Religion or Christian Theology; and Christian Ethics 194, or one elective course in Biblical Studies.

This Vocational Group requires the following Professional Courses: III, V, and VII.

V. THE MINISTRY OF TEACHING

A student electing Vocational Group V shall select for concentration five of the areas listed below, of which one shall be designated as a major in which he shall take not less than nine semester hours. He shall, in addition, take not less than six semester hours in each of the other four areas.

American Christianity	Church History
Christian Education	Historical Theology
Christian Ethics	New Testament
Christian Theology	Old Testament
Christianity and Culture	Philosophy of Religion

ADMINISTERING THE CURRICULUM

For the administration of the curriculum the following regulations have been adopted:

Full-time students must take the required courses as specified for the respective semesters.

Students who hold pastoral appointments or act as associate pastors, or students with substantial responsibilities apart from and beyond academic work, may not enroll for more than eleven course hours in the first semester of the Junior year, nor for more than twelve hours in the second semester of the same year, nor for more than thirteen hours in any semester thereafter, except on recommendation of the Associate Dean of Students to the Dean. The schedules of all students are subject to review and approval of the Dean and the Committee on Academic Standing.

Ordinarily, a student enrolled in candidacy for the B.D. or M.R.E. shall enroll for no less than nine semester hours in any semester.

Not over 30 semester hours of Summer Session work may be credited toward the degree of Bachelor of Divinity.

The status of "special student" may not be granted simply to permit avoidance of the schedule of required courses. Every request for this classification will be carefully investigated and approval of the Dean is required.

A fee of $10.00 is charged for auditing any course except where a student is already paying regular University fees. Permission to audit requires the approval of the Dean and the instructor concerned.

Student pastors and students working under the Duke Endowment Summer Field Work program of the Rural Church, are required to take one of the Field Work Practicums.

LANGUAGE STUDY

For a student taking both Greek and Hebrew, the Greek may be continued in the second year by postponing one or both of the required courses in Old and New Testament. In such cases, the Hebrew will be the free elective in that year.

A student enrolled for six hours of language, N.T. 103-104, or O.T. 201-202, may be excused from one three-hour required course, either O.T. 12 or N.T. 19.

A part-time student who desires to begin the study of Greek in the first year may postpone the required course in Old or New Testament.

Suitable entry will be made on the permanent record of any student who is granted permission to deviate from the requirements in the matter of language.

GRADUATION CREDITS

It is the responsibility of each student to see that he meets all requirements for graduation, and to take his courses in proper sequence. He is also responsible for seeing that any special permission granted him to deviate from the normal program is properly recorded in his personal file. Deviations from a normal academic program must be approved by the Associate Dean of Students as representative of the Dean of the Divinity School.

GRADING SYSTEM

The grading system of the Divinity School employs the letters A, B, C, D, and F, which have been defined as follows: A = Excellent; B = Superior; C = Average; D = Inferior; F = Failure; WP = Withdrew Passing; WF = Withdrew Failing; WI = Withdrew Illness and Inc. = Incomplete; P, Passed (satisfactory work in Field Work or M.R.E. Project). (See below.) No percentage equivalents are stated. A student is expected to maintain an average of C.

In all courses where the instructor considers attendance a necessary part of the work of the course, a student may not receive a grade of over C if his absences total 12% of the regular class periods, and if the absences total 24% of the class periods he may not receive credit for the course.

Grades of Incomplete received at the end of the fall semester must be removed by the completion of the work of the course not later than March 15. Grades of Incomplete received at the end of the spring semester must be removed by October 1. If the work of the course is not completed by these dates, the grades shall be recorded as "F." When an Incomplete is permitted it is only in cases where circumstances beyond the student's control are adjudged such as to permit extension of time limit for completion of the course.

No student shall be permitted to drop a course after the expiration of one-third of the period of instruction of the course without incurring failure, except for causes adjudged by the Dean to be beyond the student's control.

Requirements for the Degree of Master of Religious Education

The course of study leading to this degree is designed for persons desiring to engage in various forms of Christian Education.

Candidates for this degree must hold the degree of A.B. (or its equivalent), based upon four years of work beyond secondary education, in a college which is approved by one of the regional accrediting

bodies, and with academic and personal records which afford promise of competence in this area of service. The course of study will be especially useful for individuals who have had one or more years of experience in Christian Education and desire further training. Candidates for this degree will be limited in number, and individuals interested are urged to apply for admission well in advance of the opening of the academic year. All work offered for this degree, whether in the regular year or in summer sessions, must be completed within a period of six years from the date of beginning.

It is desirable that each applicant for admission show a "B" average in his college work. An applicant must show a college average of not less than "B—."

PREREQUISITES

Three of the following five prerequisite studies must have been taken by the candidate prior to his admission to the Divinity School or must be secured, without credit toward the M.R.E. degree, after being admitted:

General Psychology	3 s.h.
Sociology	3 s.h.
Education	3 s.h.
Philosophy	3 s.h.
Religion	3 s.h.

GENERAL REQUIREMENTS

Sixty semester hours of graduate-professional work are required for graduation. Not more than twelve semester hours of this work may be taken in approved summer sessions.

No credits are allowed for undergraduate courses. However, in approving plans of study leading to this degree, consideration will be given to earlier work taken in the fields of Biblical studies and Christian Education provided such courses were taken in the Junior and Senior years in accredited four-year colleges. Also where candidates for the degree have been engaged professionally as Directors of Christian Education for not less than twelve months prior to entering the Divinity School the amount of Field Work may, upon recommendation of the Director of the M.R.E. program and the approval of the Dean, be reduced to not less than six hours of Project or Directed Field Work during the period required for completing requirements for the degree.

A student who secures credit for 15 semester hours each semester will be in line for graduation at the end of two academic years. The amount of work allowed in each semester may not exceed that permitted in the B.D. curriculum.

COURSES REQUIREMENTS FOR THE M.R.E. DEGREE

Subject	*Required Semester Hours*
Biblical Studies (OT & NT)	9 to 12
Church History, Historical Theology and American Christianity	9 in two or more of these fields
Christian Theology	3 to 6
Philosophy of Religion or Christian Ethics	3
Worship	3
Pastoral Care	3
Christian Education (including missionary education)	11
Project	3
Required Hours	44 to 50
Electives	10 to 16
TOTAL	60

Requirements for the Degree of Master of Theology

The course of study leading to the degree of Master of Theology is designed for graduates of accredited theological schools who desire to continue or resume their theological education for enhancement of professional competence in selected areas of study. Enrollment in the Th.M. program is open to a limited number of students who have received the B.D. (or the equivalent) with superior academic records.

GENERAL REQUIREMENTS

The general requirements for the degree of Master of Theology are:

(1) thirty semester hours of advanced studies, with a minimum grade of "B" in each course;

(2) superior performance in a comprehensive examination covering the major and minor areas of study;

(3) residence for one academic year.

There are no general language requirements, but classical or modern languages may be required for certain courses (for example, Hebrew or Greek in Biblical studies.)

THE PROGRAM OF STUDY

At least twelve of the required thirty hours must be taken in one of the basic divisions of study (Biblical, Historical, Theological, or Practical) which shall be designated as the candidate's major; and at least six hours in another of the divisions which shall be designated as the candidate's minor. No more than twelve hours may be taken in summer sessions. No more than six semester hours of work done at another accredited institution may be transferred and credited

toward the degree. Ordinarily, no more than six hours may be taken through directed reading, and no more than three in any one semester or summer term. In the area of Pastoral Care, up to nine hours may be taken through clinical training, but no more than six in any one semester or summer term.

Each student will plan his program of courses and directed reading or clinical training with the guidance of a committee of two to be appointed by the Director of the Master's Program. The committee will include a professor in the student's major area of interest, who will act as chairman, and a professor in the minor area. The chairman, in consultation with the Director and the other member of the committee, will prepare, administer, and evaluate the comprehensive examination.

The comprehensive examination will be given at the close of the course of study for the degree, ordinarily in May or September.

The entire program of studies and comprehensive examination should be completed within twelve months. In exceptional cases, the time limit may be extended, but in no case beyond three years.

Conduct and Ministerial Acceptability

All students are admitted subject to the rules of the University and of the Divinity School, and continuance in the School is conditioned upon the observance of such rules.

The University expects of its students loyal cooperation in maintaining high standards of conduct as well as of scholarship. The University, therefore, reserves the right, and matriculation by the student is a concession of this right, to compel the withdrawal of any student whose conduct at any time is not satisfactory to the University, even though no specific charge is made against the student.

Divinity School students whose progress and development show that they are not suited to the work of the ministry will not be permitted to continue in the School. Personal and professional qualifications for the ministry will be considered in evaluating the candidacy of all students for degrees.

Courses of Instruction*

REQUIRED courses, and Senior Seminars are numbered from 10 to 50. Elective courses carrying credit in the Divinity School only are numbered from 51 to 199. Courses approved for credit in both the Divinity School and the Graduate School of Arts and Sciences are numbered above 200. Lists of courses to be offered in any semester will be available at the time of each registration.

I. Biblical Studies

OLD TESTAMENT

11. INTRODUCTION TO THE OLD TESTAMENT I.—The origin, literary forms, and contents of the books of the Old Testament in their geographical and historical setting to the Exile. 3 s.h. MR. STINESPRING

12. INTRODUCTION TO THE OLD TESTAMENT II.—The post-Exilic period with special reference to Psalms, wisdom literature, and the problem of theodicy. 3 s.h. MR. WINTERMUTE

101. POST-EXILIC PROPHECY.—A study of the post-Exilic prophets from Ezekiel to Daniel, with special reference to Messianic prophecy and related theological problems. 2 s.h.

196. THE BIBLE AND RECENT DISCOVERIES.—A survey of the contribution of the cultural setting of the Bible as an aid to its understanding. Illustrated with archaeological slides. 3 s.h.

197. CULTURAL HISTORY OF PALESTINE.—A study of significant contributions to civilization made in ancient, medieval, and modern Palestine with special reference to the three religions, Judaism, Christianity, and Islam. 3 s.h. MR. STINESPRING

201-202. FIRST HEBREW.—The principles and structure of the Hebrew language with translation of selected Old Testament narratives. One year of Greek prerequisite. 6 s.h. MR. STINESPRING

207. SECOND HEBREW.—II Samuel the first semester. 3 s.h. MR. STINESPRING OR MR. WINTERMUTE

208. SECOND HEBREW.—The Qumran Isaiah Scroll the second semester. 3 s.h. MR. STRUGNELL

209. BIBLICAL THEOLOGY.—A study of the Old and New Testaments from the standpoint of their theological unity. Prerequisite: O.T. 11 and N.T. 18. 3 s.h. MR. ANDERSON

301. THE THEOLOGY OF THE DEAD SEA SCROLLS.—A study of the religious ideas of the Scrolls in relation to the theology of the Old and New Testaments. Prerequisite: O.T. 11. 3 s.h. MR. STRUGNELL

* On approval of the Dean, courses offered in the Graduate School of Arts and Sciences other than those approved for credit in the Divinity School may be approved for credit in individual cases, provided no equivalent course is offered in the Divinity School; each case to be decided on its merits.

302. THEOLOGY OF THE INTERTESTAMENTAL LITERATURE.– A study of the Apocrypha and Pseudepigrapha with special reference to their relation to the theology of the Old and New Testaments. Prerequisite: O.T. 11. 3 s.h.
MR. ANDERSON

304. ARAMAIC.—A study of the Aramaic portions of the Old Testament, and selected passages from the Targums, Midrashes, and Talmuds. 3 s.h.
MR. STINESPRING

305. THIRD HEBREW.—An interpretative study of late Hebrew prose, with readings from Chronicles, Ecclesiastes, and the Mishnah. 3 s.h. MR. STINESPRING

306. LANGUAGE AND LITERATURE OF THE DEAD SEA SCROLLS. —A study in interpretation. Prerequisite, a knowledge of Hebrew. 3 s.h.
MR. STRUGNELL

307. SYRIAC.—A study of the script and grammar, with readings from the Syriac New Testament and other early Christian documents. Some knowledge of Hebrew and Aramaic prerequisite. 3 s.h. MR. STINESPRING

309. HISTORY OF THE ANCIENT NEAR EAST.—A specialized study of the civilizations of Egypt, Palestine, Syria, and Mesopotamia in the light of Biblical archaeology. 3 s.h. MR. STINESPRING

310. OLD TESTAMENT PROPHECY.—The prophetic movement in Israel with special emphasis on the theological standpoint of the prophets of the eighth century B.C. Prerequisite: O.T. 11 and O.T. 12. 3 s.h. MR. STINESPRING

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*HISTORY OF ART 215. RELIGIOUS ART OF THE ANCIENT NEAR EAST.—The development of art, particularly architecture and sculpture, as the material expression of religious ideas in Egypt, Mesopotamia, and in part Syria and Palestine to the Persian conquest. 3 s.h. MR. MARKMAN

*HISTORY OF ART 216. RELIGIOUS ART OF THE CLASSICAL WORLD.— The religious art, particularly architecture and sculpture, of Greece and Rome with special emphasis on the monuments in the Near East. 3 s.h. MR. MARKMAN

NEW TESTAMENT

18. EARLY CHRISTIAN LIFE AND LITERATURE.—A basic study of the civilization in which Christianity began; the origin and development of the Christian Church and its literature through the second century. 3 s.h. MR. CLARK

19. INTRODUCTION TO NEW TESTAMENT THEOLOGY.—A constructive analysis and exposition of the positive doctrinal content of the New Testament. Prerequisite: N.T. 18. 3 s.h. MR. ANDERSON

103-104. HELLENISTIC GREEK.—Designed for beginners to enable them to read the Greek New Testament. 6 s.h. MR. EFIRD

105. STUDIES IN PAUL.—An investigation of Paul's apostolate based upon the Acts and the Epistles with attention to Paul's theology as reflected in selected passages. 2 s.h. MR. ANDERSON

109. HISTORY OF THE ENGLISH BIBLE.—A general study of the history of the English version with comparison and evaluation of the numerous contemporary translations. This development will be illustrated from the Divinity School Bible collection, with access to and examination of the original editions. 3 s.h.
MR. CLARK

116. LIVING ISSUES OF NEW TESTAMENT THEOLOGY.—Examination of recent major questions of debate in the New Testament field. 3 s.h.
MR. ANDERSON

* Course offered in the Graduate School of Arts and Sciences which is credited toward the degree of Bachelor of Divinity.

216. THE PASTORAL EPISTLES.—A study of the Greek text with special reference to doctrinal teaching and the Church's situation as reflected in these writings. 3 s.h. MR. ANDERSON

217. THE NEW TESTAMENT IN GREEK.—Extensive reading of the Greek text of the New Testament, with special emphasis upon its interpretation. Prerequisite: six semester hours' study of the Greek language. 3 s.h. MR. CLARK

218. GALATIANS and I CORINTHIANS.— A detailed study of two of Paul's major epistles, based on the Greek text. Prerequisite: six semester hours' study of the Greek language. 3 s.h. MR. ANDERSON

220. I PETER AND THE GOSPEL OF JOHN.—A detailed study of two of the non-Pauline writings of the New Testament. The course will be based on the Greek text. Prerequisite: six semester hours' study of the Greek language. 3 s.h MR. CLARK

311. THE LIFE AND TEACHINGS OF JESUS.—A study of the events and sayings of the historical Jesus, in the light of His mission. 3 s.h. MR. CLARK

313. APOSTOLIC FATHERS.—A study of the Christian development from Clement of Rome to Polycarp (90-155 A.D.), with readings in the Greek text. 3 s.h. MR. CLARK

314. PATRISTIC THOUGHT.—A study of the development of early Christian doctrine to the period of Irenaeus. Prerequisite: N.T. 19. 3 s.h.

316. HELLENISTIC RELIGIONS.—A study of the Gentile religions in the Roman Empire, at the beginning of the Christian era. Prerequisite: N.T. 18. 3 s.h. MR. CLARK

317. THE SYNOPTIC GOSPELS.—A detailed study of their characteristics and contents, based upon the Greek text, with attention to their respective sources and to the development of synoptic criticism. Prerequisite: Six semester hours' study of the Greek language. 3 s.h. MR. CLARK

318. TEXTUAL CRITICISM OF THE NEW TESTAMENT.—A study of the scientific recovery of the Greek text on which modern versions are based; manuscript discoveries; principles of textual criticism; practice in collating original manuscripts in the Duke collection. Prerequisite: N.T. 103-104, or its equivalent. 3 s.h. MR. CLARK

SEE ALSO Pr. 184 and 186, and O.T. 209.

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*GREEK 257.—The social and cultural history of the Hellenistic world from Alexander to Augustus. 3 s.h. MR. ROGERS

*LATIN 258.—The social and cultural history of the Graeco-Roman world. 3 s.h. MR. ROGERS

II. Historical Studies

HISTORY OF RELIGION AND MISSIONS

24. PHILOSOPHY OF THE CHRISTIAN WORLD MISSION.—A study of theological foundations, guiding principles, and contemporary problems of the World Christian Community. 2 s.h. MR. LACY

133. HISTORY OF CHRISTIAN MISSIONS.—A survey of the spread of Christianity with special emphasis on 19th and 20th century Protestantism. 2 s.h. MR. LACY

* Course offered in the Graduate School of Arts and Sciences which is credited toward the degree of Bachelor of Divinity.

135. AREA STUDIES OF THE CHRISTIAN CHURCH.—The cultural setting and current programs and policies of the Church in one of the following areas: a. Latin America, b. India and Pakistan, c. Africa, d. Southeast Asia, e. Japan-Korea-Philippines, f. Moslem Lands, or g. United States Home Missions. (The area of study to be determined by student interest in consultation with the instructor.) 2 s.h. MR. LACY

156. FOUNDATIONS OF THE ECUMENICAL MOVEMENT.—The historical, theological and organizational background of Church unity and disunity, with an analysis of contemporary structures and development. 3 s.h. MR. LACY

159. RELIGIONS OF INDIA.—Historical and theological introduction to Indian religious life and thought. The development of Buddhism is covered, as well as Jainism and Sikhism, along with the various modes of Hinduism. 3 s.h.
MR. SULLIVAN

179. RELIGIONS OF THE FAR EAST AND THE NEAR EAST. Historical and theological introduction to the major indigenous traditions of China and Japan, as well as to Zoroastrianism, Islam, and Judaism. 3 s.h.

CHURCH HISTORY

13. HISTORY OF THE CHURCH TO THE PROTESTANT REFORMATION.—A survey through the fifteenth century in terms of spiritual genius, organizational development, great literature, and representative movements. 3 s.h.
MR. PETRY

14. HISTORY OF MODERN EUROPEAN CHRISTIANITY.—A survey of the main currents in Reformation and post-Reformation church history. 3 s.h.
MR. HILLERBRAND

85. SEMINAR IN THE REFORMATION.—A seminar devoted to the study of select aspects of Reformation and Post-Reformation Church History. Prerequisite: Permission of the instructor. 2 s.h. MR. HILLERBRAND

137. RELIGIOUS LEADERS IN CHRISTIAN HISTORY.—Representative leaders in the early and medieval church studies in relation to contemporary churchmanship. Prerequisite: C.H. 13. 3 s.h. MR. PETRY

138. GREAT BOOKS IN CHRISTIAN HISTORY.—An intensive study of Augustine's *Confessions,* Thomas à Kempis' *Imitation of Christ,* Erasmus's *Complaint of Peace,* Luther's *Christian Liberty,* Calvin's *Instruction in Faith,* and Andrewes' *Private Devotions.* 3 s.h. MR. PETRY

139. METHODISM.—A study of Methodist societies in England and the developing church in America as they gave rise to such historic issues as polity, education, division, and reunion. Prerequisite: C.H. 13. 2 s.h. MR. PETRY

330. THE CHURCH IN EUROPE SINCE 1800.—Emphasis is placed on the relation of the church to the social, economic, and political life of Modern Europe. Particular attention is given to Papal pronouncements on social issues, the relationship of Eastern to Western institutions, and ecclesiastical historiography as it involves source editions, periodicals, and ecumenical literature. 3 s.h. MR. PETRY

331. THE SOCIAL MESSAGE OF THE EARLY AND MEDIEVAL CHURCH.—A study of the social teachings and contributions of the Christian church prior to the Protestant Reformation. Prerequisite: C.H. 13. 3 s.h. MR. PETRY

332. THE MEDIEVAL CHURCH.—Outstanding characteristics of the medieval church, emphasizing theory, polity, institutions, sacraments, and worship. Prerequisite: C.H. 13. 3 s.h. MR. PETRY

334. CHURCH REFORMERS AND CHRISTIAN UNITY.—The work of such reformers as Marsilius of Padua, William of Ockham, Jean Gerson, Pierre d'Ailly and Nicholas of Cusa in relation to ecclesiastical schism and the search for Christian unity through representative councils. Prerequisite: C.H. 13. 3 s.h. MR. PETRY

336. CHRISTIAN MYSTICISM IN THE MIDDLE AGES.—Source studies, in historical perspective, of such late medieval mystics as Bernard of Clairvaux, the

Victorines, Ramon Lull, Meister Eckhart, Richard Rolle, Catherine of Siena, and Nicholas of Cusa. Prerequisite: C.H. 13. 3 s.h. Mr. Petry

339. LEFT WING MOVEMENTS OF THE REFORMATION.—A survey of the history and theology of the "radical" Reformation. 3 s.h. Mr. Hillerbrand

HISTORICAL THEOLOGY

21. THE THEOLOGY OF THE PROTESTANT REFORMATION.—The Reformation of the 16th century and its outcome in the 17th and 18th centuries. 3 s.h. Mr. Grislis

120. FAITH AND HERESY IN DIALOGUE.—Studies in the origin and role of the Apostles, the Nicene and the Chalcedonian Creeds in their contemporary setting. 3 s.h. Mr. Grislis

121. SACRAMENTS IN THE CHRISTIAN CHURCH.—Ecumenical studies in devotion and division: Baptism and the Lord's Supper. 3 s.h. Mr. Grislis

123. HISTORIC INTERPRETATIONS OF THE CHURCH.—A survey of changing conceptions of the Church in its history. 3 s.h. Mr. Hillerbrand

129. HISTORIC ANTI-CHRISTIAN POLEMICS.—Motifs and argumentation of critics of Christianity from Celsus to Nietzsche. 3 s.h. Mr. Hillerbrand

337. THE THEOLOGY OF MARTIN LUTHER.—A critical and comparative examination of Luther's system of thought. Prerequisite C.H. 13 and 14. 3 s.h. Mr. Hillerbrand

338. THE THEOLOGY OF JOHN CALVIN.—An exposition of the *Institutes of the Christian Religion* in relation to cognate documents. Prerequisite: H.T. 21 3 s.h. Mr. Grislis

371. THE THEOLOGY OF JOHN WESLEY.—A study of Wesley's basic Christian doctrines. 2 s.h. Mr. Richey

AMERICAN CHRISTIANITY

28. HISTORY OF AMERICAN CHRISTIANITY.—A consideration of the nature of Christianity in America and the history of its development. 3 s.h. Mr. Henry

191. PATTERNS OF THE SOUTHERN MIND.—The making of the social and religious mind of the American South since 1820. 3 s.h. Mr. Smith

199. THE AMERICAN SOCIAL GOSPEL.—A study of Protestant social thought and action in America since 1865. 3 s.h. Mr. Smith

296. RELIGION ON THE AMERICAN FRONTIER.—A study of the spread of evangelical Christianity as a theological and cultural phenomenon of the American West. Prerequisite: A.T. 28. 3 s.h. Mr. Henry

395. CHRISTIAN THOUGHT IN COLONIAL AMERICA.—Exposition of the main currents in Protestant Theology. 3 s.h. Mr. Smith

396. LIBERAL TRADITIONS IN AMERICAN THEOLOGY.—A study of the main types of modern religious thought, beginning with the theology of the Enlightenment. 3 s.h. Mr. Smith

397. CONTEMPORARY AMERICAN THEOLOGY.—A critical appraisal of major tendencies. 3 s.h. Mr. Henry

370. SEMINAR: JONATHAN EDWARDS.—A critical analysis of Edwards' major theological works. 2 s.h. Mr. Smith

372. SEMINAR: THEOLOGY OF PAUL TILLICH.—An examination of Tillich's philosophical theology. 2 s.h. Mr. Smith

III. Theological Studies

PHILOSOPHY OF RELIGION

20. TYPES OF RELIGIOUS PHILOSOPHY.—Basic historical orientation in religious thought, especially in Western Culture. 3 s.h. MR. LANGFORD

102. CHRISTIAN FAITH AND THE PROBLEM OF EVIL.—Analysis of the questions raised for faith by tragedy, suffering and/or evil, examination of answers proposed in Christian and philosophical literature. 2 s.h.

110. CHRISTIAN FAITH AND MODERN SCIENCE.—Relations, tensions, and possible harmonizations of scientific methodology and modern scientific knowledge with the Christian Faith. 2 s.h. MR. LANGFORD

121. GOD AND THE WORLD.—An examination of the Christian doctrines of God and the creation in the context of the History of Religions and the History of Philosophy, with emphasis upon the contemporary scene. 3 s.h.

CHRISTIAN THEOLOGY

32. CHRISTIAN THEOLOGY I.—A constructive statement of the themes of systematic theology as a task of the church today: theological method, knowledge of God, man, and Christ. 3 s.h. MR. CUSHMAN

33. CHRISTIAN THEOLOGY II.—God the redeemer, the church, word and sacraments, authority and ministry, the Kingdom of God. 3 s.h. MR. HERZOG

107. THE PERSON AND WORK OF CHRIST.—The problem of knowledge of Christ and formulation of a doctrine of his work and person in the light of Biblical eschatology. Prerequisite C.T. 20. 2 s.h. MR. CUSHMAN

108. REVELATION AND AUTHORITY.—A study of the relationship between revelation, Bible, preaching, and the church. 3 s.h. MR. HERZOG

195. ORIGINS OF DOGMATIC THOUGHT.—An analysis of dogmatic concepts in the Gospel of John: their development into a body of doctrine. 3 s.h. MR. HERZOG

213. THE STRUCTURE OF ROMAN CATHOLIC THOUGHT.—The main characteristics of Roman Catholic theology with consideration of possibilities and limitations in ecumencial conversation with Rome. Prerequisite: C.H. 13 and 14 and H.T. 21. 3 s.h. MR. HERZOG

224. CONCEPTIONS OF MAN IN WESTERN THOUGHT.—An analysis and interpretation of important types of philosophical and theological theory. 3 s.h. MR. RICHEY

320. SEMINAR: FRIEDRICH SCHLEIERMACHER.—Critical examination of the dogmatic system. Prerequisite: permission of instructor. 2 s.h. MR. CUSHMAN

321. PLATONISM AND CHRISTIANITY.—An analysis of Plato's religious philosophy and a survey of its continuing influence in Hellenistic and Christian thought. Prerequisite: six semester hours in Theology. 3 s.h. MR. CUSHMAN

322. NINETEENTH CENTURY EUROPEAN THEOLOGY.—Protestant theology from Kant to Herrmann. 3 s.h. MR. HERZOG

325. PHILOSOPHICAL THEOLOGY I.—Main problems in the history of philosophical theology. Prerequisite: permission of instructor. 3 s.h. MR. CUSHMAN

326. PHILOSOPHICAL THEOLOGY II.—Prolegomena to the system of Christian Theology. Prerequisite: C. T. 325. 3 s.h. MR. CUSHMAN

328. SEMINAR IN TWENTIETH CENTURY EUROPEAN THEOLOGY.—Critical examination of the thought of selected representative theologians. Prerequisite: permission of instructor. 3 s.h. MR. HERZOG

CHRISTIANITY AND CULTURE

16. CONTEMPORARY WESTERN CULTURE.—An analysis of the conceptual commitments in contemporary styles of thought and life as reflected in the natural sciences, philosophy, social analysis, and the arts. 3 s.h. Mr. Poteat

80. THE CHRISTIAN FAITH AND TRAGEDY.—An exploration of the tragic view of life as exhibited in selected classic and contemporary works of literature and a comparison of this with Christian belief. 3 s.h. Mr. Poteat

81. RECENT AND CONTEMPORARY ART AND THEOLOGY.—The study of 19th and 20th century painting and sculpture as documents of contemporary man's apprehension of himself and his world; and as elements in the conversation between Christian faith and culture. 3 s.h. Mr. Poteat

230. THE MEANING OF RELIGIOUS LANGUAGE.—An analysis of the credentials of some typical claims of theism in the light of theories of meaning in recent thought. Prerequisite: C.T. 32-33 or permission of instructor. 3 s.h. Mr. Poteat

231. SEMINAR IN CHRISTIANITY AND CONTEMPORARY THOUGHT.—Analytical reading and discussion of such critical cultural analysis as is found in the works of M. Polanyi, Arendt, Trilling, and others, with appraisal of the relevance for theological inquiry. Prerequisite: C.T. 32-33 or permission of instructor. 3 s.h. Mr. Poteat

380. EXISTENTIALIST THOUGHT.—An analysis of writings of representative thinkers from Kierkegaard to Satre. Prerequisite: C.T. 32-33 or permission of instructor. 3 s.h. Mr. Poteat

CHRISTIAN ETHICS

27. CHRISTIAN ETHICS I.—The central assumptions and principles of the Christian conception of the good life. 3 s.h. Mr. Beach

111. THE CHURCH AND RACE.—An examination of the biological and sociological meaning of race, the dynamics of race relations and the Church's responsibility in the area of contemporary life. 3 s.h.

114. CHRISTIAN ETHICS II.—A consideration of special problems involved in the application of Christian ethics in modern society. Prerequisite: C.E. 27. 2 s.h. Mr. Beach

190. THE CHRISTIAN CRITIQUE OF COMMUNISM.—Analysis of and alternatives to the dynamic secular ideology from a religious standpoint. 3 s.h. Mr. Lacy

192. CHRISTIANITY AND INTERNATIONAL RELATIONS.—An application of Christian Ethics to world problems. 3 s.h. Mr. Lacy

194. INTRODUCTION TO CHRISTIAN SOCIAL ETHICS.—Christian norms for social policy and their application to the domestic, economic, political, and racial patterns of modern culture. 3 s.h. Mr. Lacy

387. CHRISTIAN ETHICS AND SOCIAL PHILOSOPHY.—Selected social philosophies from Locke to Sumner, analyzed from the standpoint of Christian ethics. Prerequisite: C.E. 27. 3 s.h. Mr. Lacy

389. CHRISTIAN ETHICS AND CONTEMPORARY CULTURE.—A study of the interaction between Christian thought and current secular social theory. Prerequisite: C.E. 27 or its equivalent. 3 s.h. Mr. Beach

390. CURRENT PROBLEMS IN CHRISTIAN ETHICAL THEORY.—A critical study, seminar style, of dominant issues in Christian Ethics, through an analysis of a variety of contemporary Christian treatments of such problems as love, justice, community and vocation. Prerequisite: C.E. 27 or its equivalent. 3 s.h. Mr. Beach

391. HISTORICAL TYPES OF CHRISTIAN ETHICS I.—A critical study of representative statements of Christian ethical theory, through the early Reformation. Prerequisite: C.E. 27 or its equivalent. 3 s.h. MR. BEACH

392. HISTORICAL TYPES OF CHRISTIAN ETHICS II.—A continuation of C.E. 391, from the Reformation through current Christian ethical theory. Prerequisite: C.E. 391. 3 s.h. MR. BEACH

393. THE CHRISTIAN INTERPRETATION OF HISTORY.—A comparative examination of the chief secular and Christian theories of history current in Western thought. For advanced students. Prerequisite: C.E. 27. 3 s.h. MR. BEACH

394. CHRISTIANITY AND THE STATE.—The relation of the Christian theory of the State to political problems with special consideration of the religious assumptions underlying democratic theory and practice, and of the relationship of church to state. Prerequisite: C.E. 27. 3 s.h. MR. BEACH

IV. Professional Studies

THE CARE OF THE PARISH

10. THE CHURCH AND THE MINISTER'S VOCATION.— An orientation course for beginning students, devoted to a consideration of the nature of the Church and the tasks of the ministry. 2 s.h. MR. RICHEY AND OTHERS

23. THE CARE OF THE PARISH.—A consideration of the pastor's function as leader of the Christian community. 3 s.h. MR. INGRAM AND OTHERS

146. CHURCH BUILDING.—The role of the pastor in planning and executing building programs in the local church: architectural considerations and counsel, building requirements and plans. 2 s.h. MR. NESBITT

147. THE MINISTER IN THE PARISH.— Informal class discussion of the role of the minister in the varying responsibilities and problems of the parish as these involve the pulpit, pastoral, and community contexts. 2 s.h. MR. REGEN

148. CHRISTIAN STEWARDSHIP AND CHURCH FINANCE.—A seminar to consider the principles of stewardship education, budget making, enlistment in church support. 2 s.h. MR. INGRAM AND MR. KALE

149. PARISH AND COMMUNITY RESEARCH AND ANALYSIS.—Techniques of community survey, and the use of research data in program planning and in measuring the effectiveness of church work. 2 s.h.

150. RURAL CHURCH AND COMMUNITY.—The church serving the rural community, factors affecting church and community life, qualifications and task of rural leadership, and the church as a community institution. 2 s.h. MR. NESBITT

151. TOWN AND COUNTRY MINISTRY.—The small church, the circuit church, circuit administration, larger parish and group ministry, and the Town and Country movement. 2 s.h. MR. NESBITT

152. EVANGELISM AND THE LOCAL CHURCH.—A study of the nature, purposes and methods of contemporary Christian evangelism with special attention to the local church. 2 s.h. MR. KALE AND MR. INGRAM

153. THE PROGRAM OF THE LOCAL CHURCH.—A study of the objectives and methods of the program of the local church in Methodism with attention to planning for the church year. 2 s.h. MR. INGRAM

154. THE URBAN CHURCH.—The function, nature, program, and administration of the effective city church and of the urban minister's distinctive task. 2 s.h. MR. REGEN

155a. THE POLITY OF THE METHODIST CHURCH.—The history and present structure of the organization of The Methodist Church. 2 s.h. MR. INGRAM

155b. THE POLITY OF THE BAPTIST CHURCHES.

155c. THE POLITY OF THE CONGREGATIONAL-CHRISTIAN CHURCHES. Mr. Scott

155d. THE POLITY OF THE PRESBYTERIAN CHURCHES. Mr. Regen

FIELD WORK PRACTICUM I.—Discussion of various aspects of parish work with opportunity for students to seek guidance respecting procedures and problems. Designed especially for students with parish responsibilities. (Fall Semester. Sections arranged.) 1 s.h. Mr. Kale and Others

FIELD WORK PRACTICUM II. Required of students expecting summer assignments under the Endowment and Field Work Program. Types of parish service to be discussed. (Spring Semester) 1 s.h. Mr. Nesbitt and Others

FIELD WORK CREDIT.—Granted on written recommendation of the Director of Field Work upon the completion of satisfactory work in C.A. 23, or C.A. 147 or C.A. 150 and of Field Work Practice I or II and the performance of successful field work. 1 s.h. (Available only in the senior year.)

CHRISTIAN EDUCATION

22. THEOLOGY AND CHRISTIAN NURTURE.—The implications of theology and educational philosophy for the theory and practice of Christian education. 3 s.h. Mr. Richey and Mr. Kale

25. THE CHURCH AND CHRISTIAN NURTURE.—A constructive survey of the local church as a community of Christian nurture: Statement and evaluation of objectives, leadership and resource materials, structural patterns and administrative and supervisory procedures for the church school. 2 s.h. Mr. Kale

125. THEOLOGICAL AND PSYCHOLOGICAL INTERPRETATIONS OF MAN.—An inquiry into the relations of theological and psychological views of man's nature, predicament, and deliverance. 3 s.h. Mr. Richey

126. MISSIONARY EDUCATION IN THE LOCAL CHURCH.—Practical programs for Church School, audio-visual aids, preaching, stewardship, and special projects. 2 s.h. Mr. Lacy and Others

129. RELIGION AND PERSONALITY.—Investigation of religious aspects of the origins, structure, and development of selfhood. 3 s.h. Mr. Richey

159. CHRISTIAN FAITH AND HIGHER EDUCATION.—An examination of current philosophies of religion in higher education, with reference to student religious work and college teaching of religion. 2 s.h.

161. TEACHING METHODS.—Basic teaching procedures required by professional and lay workers in the local church. Opportunities are arranged for observation and guided practice in church schools, and/or other institutions. Required for candidates for the M.R.E. degree. 3 s.h. Mr. Kale

162. CURRICULUM BUILDING IN THE LOCAL CHURCH.—An examination of influential theories of and contemporary trends in curriculum construction, together with an evaluation of existing curricula. Actual designing of short units for use in the local church. 3 s.h. Mr. Kale

164. CHRISTIAN EDUCATION OF CHILDREN.—The organization and administration of the work of the church with children of the nursery, kindergarten, primary and junior age groups. 2 s.h. Mr. Kale

165. CHRISTIAN EDUCATION OF YOUTH.—The organization and administration of the youth program in the local church. 2 s.h. Mr. Kale

166. CHRISTIAN EDUCATION OF ADULTS.—A study of the needs of adults; the materials, methods, and principles of organization for the Christian education of adults. 2 s.h. Mr. Kale

167. THEOLOGY AND THE LAY MIND.—Formulation and communication of the Christian faith, for the mind of today. (For Middlers and Seniors.) 3 s.h. MR. RICHEY

169. THEORIES OF CHRISTIAN EDUCATION.—A critical investigation of current theories of Christian education. 3 s.h. MR. RICHEY

PASTORAL CARE

26. INTRODUCTION TO PASTORAL CARE.—The psychology of personal adjustment and pastoral care. An approach to pastoral care and its place in the pastor's total ministry grounded in an understanding of the dynamics of personal adjustment. 3 s.h. MR. GOODLING AND MR. SMITH

170. INTRODUCTION TO PASTORAL COUNSELING.—The philosophy and techniques of formal counseling through discussions of textual and interview material. Prerequisite: P.M. 26. 3 s.h. MR. GOODLING

171. PASTORAL CARE PRACTICUM I.—Pastoral Calls and Personal Counseling. A study of pastoral calling and personal counseling in the parish ministry. Prerequisites: P.M. 26 and 170. 2 s.h. MR. SMITH

172. PASTORAL CARE PRACTICUM II.—Marriage and the Family. A consideration of pre-marital and marital counseling and the psychodynamics of family life. Prerequisites: P.M. 26 and 170. 3 s.h. MR. GOODLING

173. PASTORAL CARE PRACTICUM III.—The Chaplain in a Rehabilitation Program. The ministry to those in alcoholic and correctional institutions. Prerequisites: P.M. 26 and 170. 2 s.h. STAFF

174. THE CHURCH AND MENTAL HEALTH.—The historic and present-day offices of the Church in Mental Health and a consideration of psychotherapeutic resources available in pastoral care and counseling. 2 s.h. MR. GOODLING AND MR. SMITH

175. ADVANCED PASTORAL CARE PRACTICUM.—For advanced students who want additional clinical experience in one of the Pastoral Care Practicum areas. Consent of the instructor is required. Students may register for from 1 to 5 s.h. clinic credit. STAFF

176. PASTORAL CARE PRACTICUM IV.—The Psychiatric Setting. Lectures by staff and ward visits at the Dorothea Dix Hospital in Raleigh. The place of the minister in a program dealing with the causes, treatment, and prevention of mental illness. Prerequisites: P.M. 26 and 170. 3 s.h. MR. STEININGER

177. PASTORAL CARE PRACTICUM V.—The Hospital Ministry. Pastoral care and counseling with the ill, the dying, the bereaved. Prerequisites: P.M. 26 and 170. 2 s.h. and 1 s.h. clinic MR. GOODLING

188. PSYCHOTHERAPY AND THE CHRISTIAN FAITH.—A psychological approach to Christian faith and practice in relation to critical human problems. The psychotherapeutic interpretation for the Christian minister of man's disorganization and restoration. 3 s.h. MR. SMITH AND OTHERS

273. ADVANCED PASTORAL CARE PRACTICUM II.—The Chaplain in a Rehabilitation Program. Twenty hours of supervised clinical training weekly in a rehabilitation institution. 4 s.h. STAFF

276. ADVANCED PASTORAL CARE PRACTICUM III.—The Chaplain in a Psychiatric setting. Twenty hours of supervised clinical training weekly in a mental hospital. 4 s.h. STAFF

277. ADVANCED PASTORAL CARE PRACTICUM IV.—The Chaplain in the general hospital setting. Twenty hours of supervised clinical training weekly for each 4 s.h. clinic credits. 4 s.h. STAFF

THE PREACHING MINISTRY

29-30. SERMON CONSTRUCTION—THEORY AND PRACTICE.—An investigation of the theory of preaching (first semester). Detailed work in practice preaching and a clinical session each week on the application of theory (second semester). 3 s.h. Mr. Carlton and Others

181. PRACTICAL PROBLEMS IN PREACHING.—Analysis of selected sermons and discussion of problems facing the preacher in the pulpit. Prerequisite: Pr. 29. 2 s.h. Mr. Cleland and Mr. Carlton

183. EXPOSITORY PREACHING—OLD TESTAMENT.—The exegesis and exposition of selected Old Testament passages for homiletical purposes. Prerequisite: Pr. 29. 2 s.h. Mr. Cleland

184. EXPOSITORY PREACHING—THE PAULINE EPISTLES.—A study for homiletical purposes of the religious experience and theology of Saint Paul and its influence on ethical theory and practice. Prerequisite: Pr. 29. 3 s.h. Mr. Cleland

185. EXPOSITORY PREACHING—NON-BIBLICAL.—An evaluation of drama, poetry and fiction for homiletical purposes. Prerequisite: Pr. 29. 3 s.h. Mr. Cleland

186. EXPOSITORY PREACHING—THE JOHANNINE WRITINGS.—The exegesis and exposition of the Gospel and the Epistle of John for homiletical purposes. Prerequisite: Pr. 29. 2 s.h. Mr. Carlton

187. PRE-REFORMATION PREACHING.—Sermons, handbooks, and other historical sources studied in relation to Biblical preaching and the liturgical church, the problem of popular ministry and the issues of Christian reform. Prerequisite: C.H. 13. 2 s.h. Mr. Petry

188. POST-REFORMATION PREACHING.—A study of the theological trends and significant personalities in the preaching tradition from the sixteenth century to the present. 2 s.h. Mr. Carlton

THE WORSHIP OF THE CHURCH

178. CORPORATE WORSHIP.—The theory and practice of the common worship of the Church, using various manuals of worship. One hour to be arranged. 3 s.h. Mr. Rudin

180. CHURCH MUSIC.—A three-fold study including: (1) musicianship, song-leading, and basic conducting; (2) a survey of the monuments of church music; (3) the problems of the music program in today's church. Mr. Hanks

SPEECH

17. MINISTERAL COMMUNICATION.—Theory and practice of effective speaking, leading and oral reading in the context of corporate worship. In four sections, with drill groups and individual conferences. 2 s.h. Mr. Rudin

34. WORKSHOP IN COMMUNICATION.—Intensive drill in voice, diction, speaking and reading. Enrollment by platform test and recommendation of preaching faculty. 1 s.h. Mr. Rudin

134. LITURGICAL READING.—Practice in reading the liturgical materials of the pastoral ministry: Scriptures, prayers, and the rites and seasonal services in the Methodist *Book of Worship*. 2 s.h. Mr. Rudin

V. Senior Seminars

In the third year each B.D. candidate will take one Senior Seminar, yielding 2 s.h. credit. No student may enroll in more than one Senior Seminar without special permission of the Dean. Senior Seminars will not yield Graduate School credit, nor be open to special students.

Enrollment in each Senior Seminar shall be normally not more than twelve. No Senior Seminar need be conducted for an enrollment of less than five students. Each Senior Seminar will be in charge of a Chairman. Not less than two instructors will participate in each Seminar. General supervision of all Senior Seminars will be exercised by a standing committee of the Faculty.

The work done in each Senior Seminar should be equivalent to that done in a normal 2 s.h. course, with reading based upon a prepared reading list and a substantial paper or written project report.

SENIOR SEMINARS FOR 1960-61

Fall Semester

61. THE CHRISTIAN FAITH AND ITS PROCLAMATION 2 s.h.
Mr. Rudin, Mr. Cleland, Mr. Ingram

66. THE CHRISTIAN CHURCH AND SOCIAL CHANGE 2 s.h.
Mr. Lacy, Mr. Grislis

70. PASTORAL CARE AND PREACHING 2 s.h.
Mr. Carlton, Mr. Goodling, Mr. Richey

Spring Semester

62. WESTERN CHRISTIANITY AND NON-CHRISTIAN FAITHS 2 s.h.
Mr. Sullivan, Mr. Hillerbrand

67. THE NEW TESTAMENT AS MATERIALS FOR TEACHING 2 s.h.
Mr. Anderson, Mr. Kale, Mr. Henry

68. THE CHRISTIAN FAITH AND CONTEMPORARY LIFE 2 s.h.
Mr. Poteat, Mr. Herzog, Mr. Ingram

Not offered 1960-61

63. THE ECUMENICAL MOVEMENT IN THE MODERN CHURCH 2 s.h.

64. THE OLD TESTAMENT AS MATERIALS FOR TEACHING 2 s.h.

65. PRACTICAL VALUES OF BIBLICAL RESEARCH 2 s.h.

69. THE WORSHIPING CHURCH 2 s.h.

Cost, Residential Arrangement, Student Aid and Field Work

Fees and Cost

THE University tuition charge is $425.00 per semester. Scholarships covering this amount are granted to all Divinity School students. Other charges are as follows:

Fees per semester:

General Fee	$ 50.00
Approximate cost of meals per semester (estimated)	225.00
Room per semester (double room) for men	100.00
Total per semester	$375.00

The "General Fee" is in lieu of all special charges, and includes the following fees: Matriculation, Medical, Library, Damage, Commencement, and Diploma.

A "General Fee" is due and payable not later than the day of registration for a particular semester. After the day of registration no refund of the "General Fee" will be made except for involuntary withdrawal to enter the Armed Services.

Divinity School students may secure admission to all regularly scheduled University athletic contests held on the University grounds during the entire academic year by payment of the athletic fee of $10.00 per year plus any Federal taxes that may be imposed. This fee is payable in the fall semester.

Students who are reported by the treasurer's office as delinquent in their accounts will be debarred from credit in courses until cleared by the treasurer's office. Transcripts will not be issued for delinquent students.

A fee of $1.00 will be charged for any student-initiated change in courses after the beginning of classes each semester.

The payment of the general fee entitles the student who is taking at least 7 hours or more to full medical and surgical care, with the exceptions noted below. This service is under the direction of the University Physician with the co-operation of the staff of Duke Hospital. It includes hospitalization, medical and surgical care, drugs, dressing, X-ray studies, and ward nursing. A charge for board is made at the same rate as in the University dining halls. Refraction

of eyes, treatment of teeth and of all chronic conditions, such as the removal of diseased tonsils, are not included in this service. The cost of any necessary braces and orthopedic appliances, as well as of special nursing, must be borne by the student.

Since the Student Health Program does not cover students while away from the Duke Campus, it is imperative that student pastors who are subjected to the hazards of highway travel with great frequency, secure complementary health and accident insurance. Such a policy may be secured at the Treasurer's Office for a modest premium.

Persons seeking to audit Divinity School courses must, with the consent of the instructor concerned, secure permission of the Dean's office. In accordance with general University practice a fee of ten dollars will be required for auditing of each semester course. As a condition of being seated, the auditor will present to the instructor a card of proper authorization from the Dean's office.

LATE REGISTRATION

Students matriculating in either semester at a date later than that prescribed in the catalogue shall pay to the Treasurer of the University a penalty of $5.00.

Living Accommodations

The Men's Graduate Center is available to men of the Divinity School. The rooms are equipped for two persons and the rental charge for a double doom is $400.00 for the academic year or $200.00 for each occupant, or $100.00 per semester for each occupant.

Epworth Hall on the Woman's College Campus is available to women enrolled in the Divinity School. The rental charge for a single room is $275.00 for the academic year or $137.50 each semester. The rental charge for a double room is $450.00 for the academic year or $225.00 for each occupant, or $112.50 per semester for each occupant.

The University does not operate housing facilities for married students. Married students should arrange for rooms or apartments in the city. In order to aid married students, the Housing Bureau maintains a file on rooms and apartments listed for rental to Duke students.

Applications for rooms are to be made to the Housing Bureau, Duke University, Durham, N. C. Rooms are rented for the academic year, but for no period less than one semester unless by special arrangement. No refund of room rent will be made except for involuntary withdrawal to enter the armed services. Such refunds will be made in accordance with the University's established schedule.

Regulations governing the occupancy of rooms will be supplied

by the Housing Bureau to those students making application for housing. Occupants are expected to abide by these regulations.

The dining facilities in the Men's Graduate Center, Duke University Union, and the Woman's College Union are available to students of the Divinity School. The cost for the academic year ranges from $450.00 upward, depending on the taste of the individual.

DINING HALLS

Food service on both the Woman's College Campus and the West Campus is cafeteria style. The cost of meals approximates $225.00 per semester depending upon the need and taste of the individual. The dining facilities on the West Campus include three cafeterias with multiple choice menus and, in addition, the Oak Room, where full meals and *a la carte* items are served. The Men's Graduate Center has a cafeteria open at meal hours, and a coffee lounge which is open until 11:00 P.M. The prices are the same as in the West Campus Union.

MOTOR VEHICLES

Every motor vehicle operated on the campus by students enrolled in Duke University must be registered at 07 Allen Building within five days after arrival and thereafter must display the proper decal emblem. To register a vehicle, the student should present the following documents: (1) state vehicle registration, (2) state operator's license, (3) evidence of automobile liability insurance as required by North Carolina law ($5,000 per person, $10,000 per accident for personal injuries; $5,000 for property damage).

Student Aid

Duke University remits its regular tuition charges to all students enrolled in the Divinity School. In recognition of this, students are expected to render occasional services such as the teaching of Church School classes and responding to calls for particular services. Financial aid, over and above this is available in the form of a limited number of scholarships, awarded on the basis of merit and mostly for Middlers and Seniors, and grants-in-aid for assignments under the Endowment and Field Work Program. These funds come from sources described on pages 48 through 51 of this catalogue. Those appointed to Endowment and Field work during the Summer period agree to give ten weeks' service to a church to which they are assigned. In return they receive their board and room for the period of their Summer service and grants up to $700. By special arrangement, a student may be assigned to a church for five weeks' work with one-half the stated remuneration.

There are limited opportunities during the academic year for service under the Endowment and Field Work Program. Students appointed to these positions agree to engage in a specified number of hours of field service each week for which they are paid amounts agreed upon by the students involved, the pastors, or other representatives of the churches and the Endowment and Field Work Committee. (Note additional statements in the Section on Field Work.)

In most cases students will be expected to be able to finance themselves for the first semester of work in the Divinity School; those who show that they can carry their school work satisfactorily are then eligible for various forms of financial assistance.

There are a number of opportunities during the academic year for part-time non-church employment on the Duke Campus and in the City of Durham. Students needing this type of employment must make their own arrangements with employers and must plan their work schedules so as not to be denied full participation in the educational and cultural opportunities of the Divinity School.

Applications for scholarship assistance and grants-in-aid must be made to the Endowment and Field Work Office, P. O. Box 4814, Duke Station, Durham, North Carolina. Students or wives desiring employment with the University should apply to the Director of Personnel, Duke Station, Durham, North Carolina, Office 01, Allen Building. All applications and assignments will be reviewed by and must have the approval of the Committee on Scholarships and Financial Aid.

FIELD WORK

Its Nature and Purpose. Field work is conceived to have a two-fold nature. (1) It is a symbol of a mutual relationship between the seminary and the local church, and it is an effective way of declaring and implementing the purpose of the seminary to serve the church as well as the student. (2) It is a vital part of the total education of the theological student, assisting him in understanding the nature and task of the church and in testing his motivation and fitness for the vocation of the ministry.

More specifically it is the purpose of field work: (1) to assist the student in understanding the nature and task of the local church; (2) to study some of the practical problems involved in the care of the parish; (3) to afford an opportunity for the progressive development of the student's knowledge and ministerial skills through responsible participation in the life of the church; (4) to contribute leadership to churches in the region, especially those having need for part-time workers; (5) to enable students to earn a part of the cost of theological education.

Types of Field Work. (1) Student pastors, appointed by conferences or other official agencies of a recognized denomination. A student must have the approval of the Director of Field Work, as the agent of the Dean, before accepting an appointment as a student pastor. (2) Student assistant pastors, assigned by the Field Work Director, in consultation with the pastor and/or other leaders of local churches, to serve during the academic year. (3) Other church-related positions, such as teaching church school classes, counseling youth groups, scouting and recreation. (4) Assistant pastors under the Summer Endowment Program. This is a program of ten weeks service in Methodist rural charges of North Carolina, under the appointment and supervision of the Director of the Work of the Rural Church, in cooperation with district superintendents and pastors. All students serving in this program must enroll for Practicum II in the Junior year and participate each year in the preparatory training sessions, planned by the Duke Endowment Student Association in collaboration with the Director of the Work of the Rural Church.

Supervision. The chief supervisors of the Duke field work program are the Director of Field Work and the Director of the Work of the Rural Church under the Duke Endowment. Associated with them are other members of the administrative and teaching staffs of the Divinity School, district superintendents and pastors, denominational executive secretaries and graduate students in religion.

Supervision is carried on through: (1) Practicum I, required of all student pastors in their Junior Year and Practicum II, required of all students working in the summer Duke Endowment program; (2) Regular visits by supervisors to charges served by student pastors and assistant pastors, followed by students-supervisor conferences; (3) Seminars (one day) for supervisors; (4) Regular report from all students and charges to the Endowment and Field Work Offices.

The Time Element of Field Work. (1) While the student pastor carries a reduced academic load (see page 26) his divinity studies provide his chief concern and occupation. The amount of time given to parish responsibilities is necessarily limited. (2) It is expected that students serving as assistants during the academic year will be limited ordinarily to 12 to 15 hours of field service per week. A more extensive responsibility beyond such a number of hours will require the student to reduce his academic load. (3) Students serving as church school teachers, youth counselors, and in similar positions are ordinarily expected to devote no more than 3 to 6 hours to this service per week.

Travel. Student pastors serving charges located beyond 50 to 55 miles distance from the campus are required to take residence in Durham or vicinity during the academic work week, Monday, 2 P.M. through

Friday, 4 P.M. Assistant pastors and those doing special work are expected to keep their daily travel as low as possible.

STUDENT EMPLOYMENT

Students seeking admission to the Divinity School, or already enrolled in regular course, may assume responsibility for pastoral charges, associateships or other substantial church-related assignments only upon consultation and approval of Divinity School authorities. Application for approval may be made to the Director of Field Work, who acts for the Dean; and all applications are subject to the review of the Committee on Student Life and Professional Qualifications. Students may, on need or occasion, appeal, through the Director of Field Work, to the Committee for review of their cause or petition.

The marital status of all students at time of entering the Divinity School will be used as the basis for determining their financial needs and assistance during their term of attendance.

LOAN FUNDS

Divinity School students who have satisfactorily completed one semester's work are eligible to apply for loans from the University Loan Fund. Such applications should be filed on the approved forms in the Office of the Secretary of Duke University within the first week of each semester. All applications must be reviewed and approved by the Associate Dean of Students.

ENDOWED SCHOLARSHIP FUNDS

Certain special scholarship funds have been established, the income of which is available for students wishing to secure training in preparation for the Christian ministry.

These scholarships are all awarded on the basis of service performed in a local church, thus providing experience as well as financial aid for the student. Application may be made to the Committee on Scholarships and Financial Aid through the Associate Dean of Students.

N. Edward Edgerton Fund

In 1939 Mr. N. Edward Edgerton of Raleigh, North Carolina, an alumnus of Duke University of the Class of 1921, a member of the Board of Trustees of the University and a member of the Committee on the Divinity School, established the N. Edward Edgerton Fund. The award is limited to students who are candidates for the B.D. degree.

P. Huber Hanes Scholarship

Mr. P. Huber Hanes of Winston-Salem, North Carolina, an alumnus of Duke University of the Class of 1900 and a member of the

Board of Trustees, has established an annual scholarship yielding the sum of approximately $600.00.

Elbert Russell Scholarship

In 1942 the Alumni Association of the Divinity School established a scholarship fund in honor of Elbert Russell, late Dean of the Divinity School and for a number of years Professor of Biblical Theology.

W. R. Odell Scholarship

In 1946 the Forest Hills Methodist Church, Concord, North Carolina, established a scholarship fund in memory of W. R. Odell, for many years a member of the Board of Trustees of the University.

Myers Park Scholarship Fund

The Myers Park Scholarship Fund was established in 1948 by contributions of the members of the congregation of the Myers Park Methodist Church, Charlotte, N. C.; the income to be used for the benefit of the Divinity School.

Hersey E. Spence Scholarship

In 1947 the Steele Street Methodist Church of Sanford, North Carolina, established a scholarship fund in honor of Professor Hersey E. Spence, a former pastor of the congregation, the income to be used for scholarship aid to deserving students of the Divinity School.

George M. Ivey Scholarship Fund

This fund was established December 8, 1948, by gift of George M. Ivey, of Charlotte, North Carolina, an alumnus of Duke University of the Class of 1920, the income to be used for scholarship aid for deserving students in the Divinity School.

Laurinburg Christian Education Fund

This fund was established December 11, 1948, by gift through the Methodist College Advance Fund, the income to be used for scholarship aid for worthy students of the Divinity School.

Jesse M. Ormond Scholarship Fund

In 1948 the North Carolina Conference established a fund in honor of Professor Jesse M. Ormond, who for many years was Director of Field Work in the Divinity School and Professor of Practical Theology.

Thomas Jefferson Finch Scholarship

In 1955 Mr. George Davis Finch, '24, and Mr. Brown Faucette Finch, '54, established an annual scholarship in the amount of six hundred and fifty dollars a year in memory of Mr. Thomas Jefferson

Finch, Trinity College Class of 1884, who was the father and grandfather of the donors.

R. ERNEST ATKINSON LEGACY

In 1952, under the will of the Reverend R. Ernest Atkinson, of Richmond, Virginia, a member of the Trinity College Class of 1917, a sum of money was given to the Divinity School, the income to be used for the benefit of the School.

LEWIS CLARENCE KERNER SCHOLARSHIP

This scholarship fund was established May 1959 by Beatrice Kerner Reavis, of Henderson, North Carolina, in memory of her brother, Lewis Clarence Kerner. The income from the principal of this fund is designated for the assistance of native or foreign born students preparing for service in World Christian Missions.

DUKE ENDOWMENT GRANTS-IN-AID

The Duke Endowment provides aid to North Carolina rural Methodist churches for operation and maintenance. There are available from this source grants-in-aid to provide additional pastoral service. At the present rate of income approximately seventy students can be employed as assistant pastors in this service during the summer. Terms of these grants are stated on page 45 of this catalogue.

ANNUAL SCHOLARSHIPS

In addition to the endowed scholarship and funds provided by the Duke Endowment, the Divinity School receives annual scholarship funds from the following organizations and individuals: Myers Park Methodist Church, Charlotte, N. C.; the South Carolina Conference of the Methodist Church; The First Methodist Church, Morehead City, N. C.; The First Methodist Church, Kingsport, Tenn.

These scholarships are awarded on the same basis as the endowed scholarships.

THE METHODIST CHURCH

The Methodist Church makes a substantial contribution to the Divinity School by designating a certain percentage of its World Service offerings to the School.

The North Carolina and the Western North Carolina Conferences, direct a certain percentage of the College Sustaining Fund to the Divinity School. The South Carolina Conference is a contributor to Divinity School operational income.

THE METHODIST COLLEGE ADVANCE

The Divinity School was a participant in the North Carolina Methodist College Advance with askings of $200,000.00 for scholarship aid

and extension of the School's service to ministers. Many local churches and individuals have shared in the raising of this significant sum. Specific contributions are the Henry Harrison Jordan Loan Library, the James A. Gray Fund, the J. M. Ormond Fund, the Laurinburg Christian Education Fund, the Hersey E. Spence Fund, and the Myers Park (Charlotte, N. C.) Methodist Church Fund.

THE JAMES A. GRAY FUND

In 1947 Mr. James A. Gray of Winston-Salem, North Carolina, presented the fund which bears his name to the Divinity School for use in expanding and maintaining its educational services in behalf of North Carolina churches and pastors. From this fund three scholarships are awarded; two in city church work, and one in rural church work. The Divinity School Seminars and a number of scholarships in the School for Approved Supply Pastors are also supported by income from this gift, as well as the James A. Gray Lectures.

NATIONAL METHODIST SCHOLARSHIPS

Two National Methodist Scholarships, having a cash value of $500 each, are made available annually by the General Board of Education of the Methodist Church to two outstanding students in the first year class. Awards are granted by the General Board of Education upon the recommendation of the faculty. Students receiving these awards are required to participate in a two-week expense paid travel seminar during which they visit and study all of the boards and agencies of the Methodist Church located in Nashville, Chicago, New York City, Washington, and Philadelphia.

FRANK S. HICKMAN PREACHING AWARD

The Frank S. Hickman award in preaching, amounting to $100.00 for the best sermons preached in an annual competition, was established in 1950.

Summer, 1960

Class enrollments will be controlled as occasion may arise so as to secure a fairly even distribution among the courses offered in each term.

First Term: June 10-July 15

21 (DS) THE THEOLOGY OF THE PROTESTANT REFORMATION.—The Reformation of the 16th century and its outcome in the 17th and 18th centuries. 7:40-9:00. 3 s.h. Mr. Grislis

28 (DS) HISTORY OF AMERICAN CHRISTIANITY.—A consideration of the nature of Christianity in America and the history of its development. 7:40-9:00. 3 s.h. Mr. Henry

116 (DS) LIVING ISSUES OF NEW TESTAMENT THEOLOGY.—Examination of recent major questions of debate in the New Testament field. 11:00-12:20. 3 s.h. Mr. Anderson

195 (DS) ORIGINS OF DOGMATIC THOUGHT.—An analysis of dogmatic concepts in the Gospel of John: their development into a body of doctrine. 9:20-10:40. 3 s.h. MR. HERZOG

Second Term: July 16-Aug. 20

16 (DS) CONTEMPORARY WESTERN CULTURE.—An analysis of the conceptual commitments in contemporary styles of thought and life as reflected in the natural sciences, philosophy, social analysis, and the arts. 9:20-10:40. 3 s.h. MR. POTEAT

111 (DS) THE CHURCH AND RACE.—An examination of the biological and social meaning of race, the dynamics of race relations and the Church's responsibility in the area of contemporary life. 7:40-9:00. 3 s.h. MR. RANSON

192 (DS) CHRISTIANITY AND INTERNATIONAL RELATIONS.—An application of Christian Ethics to world problems. 7:40-9:00. 3 s.h. MR. LACY

224 (DS) CONCEPTIONS OF MAN IN WESTERN THOUGHT.—An analysis and interpretation of important types of philosophical and theological theory. 11:00-12:20. 3 s.h. MR. RICHEY



ENTRANCE TO THE DIVINITY SCHOOL

Enrollment 1959-60

Fall and Spring Semesters

Aills, Lovell Roy (A.B., Asbury College) Huutington, W. Va.
Alexander, Gayle Thomas (A.B., Asbury College) Tiouesta, Pa.
Alexander, Kenneth Lee (B.A., McMurry College) Anton, Tex.
Amon, William Ernest (B.A., Randolph-Macon College) Portsmouth, Va.
Andrews, John Cleveland (A.B., East Carolina College) Ayden, N. C.
Arichea, Daniel, Jr., Castillo (A.B., Philippine Christian Colleges; B.Th., Union Theological Seminary, Phil.) San Narciso College, Zambales, Philippines
Armstrong, Edward P. (A.B., High Point College) Fayetteville, N. C.
Ashby, Lavina Carol (A.B., Kentucky Wesleyan College) Madisonville, Ky.
Askew, Reuben Samuel Jr., A.B. Elon College) Sanford, N. C.
Athearn, William James (B.A., Randolph-Macon College) Newport News, Va.
Bailey, James Herbert (A.B., Wofford College) Elm City, N. C.
Bailey, Lloyd Richard (A.B., Duke University) Burnsville, N. C.
Baker, Millard Randall (B.S., East Tennessee State College) Haw River, N. C.
Barclift, Chancie DeShield (A.B., Duke University) Durham, N. C.
Barnes, Robert Sallade (B.A., American University) Arlington, Va.
Bass, Bill Edward (A.B., Wofford College) Shelby, N. C.
Bassett, Paul Merritt (A. B., Olivet Nazarene College) Troy, Ohio
Beeker, William Arlen (A.B., Duke University) Albemarle, N. C.
Bennett, Garland B. (A.B., Elou College) Ramseur, N. C.
Bennett, James Roberts (A.B., Elon College) Greensboro, N. C.
Berry, Frank Eugene (A.B., High Point College) Rougemount, N. C.
Bilberry, Davis Leroy (A.B., Hendrix College) Hanesville, La.
Blevins, Gerald Edward (B.A., Anderson College) Akron, Ohio
Bond, Hugh Lawrence (A.B., Lambuth College) Memphis, Tenn.
Borgen, Ole Edvard (A.B., Greensboro College) Lillestrom, Norway
Bovender, Coy (A.B., High Point College) Winston-Salem, N. C.
Bowyer, Orman Richard (A.B., Marshall College) Huntington, W. Va.
Bradley, Benjamin David (B.A., Huntingdon College) Andalusia, Ala.
Brady, Lester Gale (A.B., Elon College) Henderson, N. C.
Bray, Henry Winfred (A.B., Elon College) Burliugton, N. C.
Bridges, Samuel Belton (A.B., Wofford College) Chester, S. C.
Brown, Beverly Ball (B.A., University of Richmond) Roanoke, Va.
Brown, Blon Dean (A.B., High Point College) Jamestown, N. C.
Brown, Gary Holmes (A.B., Duke University) Liberty, N. C.
Brown, Roduey Cain (B.S., University of California, Berkeley) Sutter Creek, Calif.
Bryant, Charles V. (A.B., University of Cincinnati) High Point, N. C.
Bumgarner, Larry Gwyn (A.B., Lenoir-Rhyne College) Hickory, N. C.
Burch, Stanley Ellison (B.S., Florida State University) St. Petersburg, Fla.
Byers, Morris Jennings (A.B., Wofford College) Caroleen, N. C.
Byrd, Douglas Leon (A.B., High Point College) Candor, N. C.
Callahan, William Paul (A.B., Georgia State College) Stokes, N. C.
Calloway, James Roy (A.B., High Point College) Winston-Salem, N. C.
Cannon, Douglas Cornelius III (B.B.A., College of William and Mary) Norfolk, Va.
Capps, Clingman Carter (A.B., Elon College) Black Mountain, N. C.
Carden, Billy McCoy (A.B., Duke University) Durham, N. C.
Carleton, Rhon Vernon (A.B., Florida State University) Hollywood, Fla.
Carlson, William Paul (A.B., Wofford College) North Augusta, S. C.
Carter, Robert Lee Jr. (B.M., Morris Harvey College; M.A., Marshall College) Charleston, W. Va.
Chandler, Danny Ross (B.S., University of Oklahoma) Blackwell, Okla.
Chestnutt, Lonnie B. (B.A., University of Oklahoma) Holdenville, Okla.
Chewning, Harriet Estelle (A.B., Columbia College) Florence, S. C.
Clark, Oliver Watson Jr. (A.B., Birmiugham-Southern College) Birmingham, Ala.
Clarke, William Thomas (B.A., Lambuth College) Savannah, Tenn.
Claytor, Robert Brown (B.A., Berea College) Kingsport, Tenn.
Clinard, Hubert Conrad (A.B., High Point College) Thomasville, N. C.
Cocke, Emmet Winbern, Jr. (B.A., Emory and Henry College) South Boston, Va.
Cockrell, John Grafton (B.A., Randolph-Macou College) Ophelia, Va.
Collins, Huron Gilbert (B.A., Randolph-Macon College) Big Island, Va.
Cooke, George Waylon (A.B., Duke University) Durham, N. C.
Corderman, Delos Duane (A.B., Morningside College) Seattle, Wash.
Cosby, James Mason (B.A., Randolph-Macon College) Bon Air, Va.
Courtoy, Charles Webb (B.S., Florida Southern College) Jasper, Fla.
Creech, Clyde McGee (A.B., Atlantic Christian College) Goldsboro, N. C.
Creech, Harlan L. III (A.B., Lenoir-Rhyne College) Salisbury, N. C.

Davis, Alonzo Richard (A.B., Asbury College) Coleridge, N. C.
Day, William Benjamin, Jr. (B.A., American University) Arlington, Va.
Deal, Pinckney Gustave III (A.B., High Point College) Charlotte, N. C.
Deel, Billy Gene (B.S., Concord College) Spanishburg, W. Va.
Dickey, Richard Jerome (B.S., Springfield College) Erie, Pa.
Dowdle, Joseph Oscar (B.A., Millsaps College) Tunica, Miss.
Drew, Robert Mitchell (B.S., Clemson College) Ridgeland, S. C.
Duffie, George S. (A.B., Wofford College) Lake View, S. C.
Dundas, Charles Owen (A.B., Marshall College) Huntington, W. Va.
Dunn, Ross Irwin (B.A., McMurry College) Post, Tex.
Durkovich, John (B.A., Randolph-Macon College) Portsmouth, Va.
Erbach, William W. (B.A., Rutgers University) Clifton, N. J.
Faggart, James Richard (A.B., Duke University) China Grove, N. C.
Faulkner, Clyde Wheeler Jr. (A.B., High Point College) Winston-Salem, N. C.
Fendt, Paul Frederick (B.A., Taylor University) Durham, N. C.
Floyd, Jewell Patterson, Jr (B.S.B.A., University of Florida) Tampa, Fla.
Ford, Arnold Gayle (A.B., High Point College) Indian Trail, N. C.
Frank, Merle F. (B.A., Salem College) Clarksburg, W. Va.
Friday, William Bert (A.B., Southeast Missouri State College) Sanibel Island, Fla.
Frierson, Leon Roy (A.B., Marshall College), Mamers, N. C.
Fulcher, Thomas Otis (A.B., Marshall College) Huntington, W. Va.
Funderburk, Donald Franklin (A.B., Wofford College) Lancaster, S. C.
Gandy, Margaret Parham (B.S., Florida State University) Orlando, Fla.
Garrett, Robert Glenn (A.B., Elon College) South Norfolk, Va.
Gentry, Paul Cullum (A.B., Duke University) Maxton, N. C.
Gibbons, Robert Herbert Jr. (A.B., Duke University) St. Georges, Del.
Gilbert, Douglass Wayne (A.B., Lambuth College) Jackson, Tenn.
Gravitt, George Henry (B.A., Randolph-Macon College) Virgilina, Va.
Griffis, James Wilson, Jr. (B.A., Millsaps College) Yazoo City, Miss.
Groh, Dayle Gregory (A.B., Baker University) Garden City, Kansas
Halcott, Kenneth Earl (B.A., University of Bridgeport) Milford, Conn.
Hammill, Terry Lingle (A.B., Duke University) Concord, N. C.
Hancock, Franklin Elliott (B.A., Randolph-Macon College) Sedley, Va.
Hanks, Donald Kirk (B.A., Southwestern College) Great Falls, Mont.
Harrington, Richard William (B.S., Ed., Mansfield College) Sanborn, N. Y.
Harris, Robert Gentry Jr. (A.B., High Point College(Hillsboro, N. C.
Harrod, Howard Lee (B.A., University of Oklahoma) Holdenville, Okla.
Haruyama, Justin Giichi (A.B., University of California, M.A., Columbia University) Fujisawa, Japan
Harward, John Elliotte Jr. (A.B., Hampden-Sidney) Farmville, Va.
Helms, Roy Glenn (A.B., Duke University) Elizabethtown, N. C.
Hemingway, John Alden (A.B., Duke University) Elizabethtown, N. C.
Hickey, Timothy R. (B.A., Wheaton College) Durham, N. C.
Hobbs, James Lee (B.S., Wake Forest College) Clinton, N. C.
Hodgin, Hubert H. (A.B., Wofford College) Wilmington, N. C.
Hoffmeyer, Allen King (A.B., Wofford College) Florence, S. C.
Hogue, Marguerite Constance (B.A., Augustana College) Washington, D. C.
Holden, Doulglas Tripp (A.B., University of Michigan) Fort Lauderdale, Fla.
Holmes, Meritt Conrad (A.B., Catawba College) Charlotte, N. C.
Huggins, Clarence Pope (A.B., Davidson College) Kingstree, S. C.
Hultman, Robert Clifford (A.B., Elon College) Pittsboro, N. C.
Hunsley, Lloyd Arthur (A.B., Duke University) Philadelphia, Pa.
Hunsucker, Lloyd George (A.B., Pfeiffer College) Albemarle, N. C.
Hunt, Marvin Dana (B.A., Lynchburg College) South Boston, Va.
Hurley, Robin Wade (A.B., Pfeiffer College) Troy, N. C.
Hutchinson, Charles Howard (A.B., Pfeiffer College) Rockingham, N. C.
Isenhour, Olin Bernis (A.B., Lenoir-Rhyne College) Hickory, N. C.
Jackson, Wilbur Ivan (A.B., High Point College) Ayden, N. C.
Jarrett, Wilbur Arthur (A.B., High Point College) Efland, N. C.
Jarvis, David Franklin, II (B.A., Randolph-Macon College) Newport News, Va.
Jennings, Thomas Earl (B.A., Randolph-Macon College) Richmond, Va.
Jennings, William Raymond (B.A., Ohio Wesleyan University) Ashland, Ky.
Johnson, George William (A.B., Pfeiffer College) Snow Camp, N. C.
Johnson, Harvey Bynum (A.B., High Point College) Apex, N. C.
Jones, George Samuel (A.B., Hendrix College) Hamburg, Ark.
Jones, Harold Edward (A.B., Morris Harvey College) Winona, West Va.
Jones, Kelley Ray (A.B., High Point College) Winston-Salem, N. C.
Jones, Vassar Wilson (A.B., Atlantic Christian College) Roxboro, N. C.
Jones, Walter George (B.S., Virginia Polytechnic Institute) Woodlawn, Va.
Jordan, John Sharpe (A.B., Duke University) Concord, N. C.
Joyner, William Thomas (A.B., Elon College) Liberty, N. C.
Judy, Carl Wesley (B.D., Duke University) Wonju, Korea
Justice, Henry Adolphus (A.B., Duke University) Asheville, N. C.
Kannon, James Covey, Jr. (B.A., Emory and Henry College) Columbia, Tenn.
Keeney, Lowell Edward (A.B., Salem College) Glasgow, West Va.
Key, Joel Thomas (A.B., Asbury College) Greensboro, N. C.
Kiker, Frank Wade (A.B., Davidson College) Charlotte, N. C.
Kimbrough, S. T., Jr. (A.B., Birmingham-Southern College) Birmingham, Ala.
King, Julia Ord (B.S., Iowa State College, M.S., Catholic University) San Antonio, Tex.
Kinkle, Joseph Howard (A.B., Catawba College) Bridgeton, N. J.
Kirk, David (A.B., Marshall College) Huntington, W. Va.
Knox, Robert Townsend (A.B., Marshall College) Huntington, W. Va.

Kreutzer, Waltraud Siglinde (B.A., Paedagogic College) Karlsruhe, Germany
Lane, William Anderson (A.B., University of North Carolina, M.A., Princeton University) Macon, Ga.
Lazenby, Ashby Louis (B.A., Lynchburg College) Bedford, Va.
Leonard, Raleigh Webster (A.B., Duke University) Lexington, N. C.
Leverenz, Robert Edward (A.B., Morningside College) Kingston, N. Y.
Lewis, Johnnie Murrell (A.B., High Point College) Henderson, N. C.
Lewis, Sinclair Emsley (A.B., University of South Carolina) Charleston, S. C.
Lininger, Harold Frederick (B.A., Baldwin-Wallace College) Johnstown, Pa.
Littiken, John Perry (A.B., Elon College) Graham, N. C.
Lloyd, Frank Irwin Jr. (B.A., Mississippi Southern College) Bynum, N. J.
Long, Allen Eugene (B.A., Emory and Henry College) Rockwood, Tenn.
Long, Eugene T. (B.A., Randolph-Macon College) Richmond, Va.
Loy, James Columbus (A.B., Elon College) Burlington, N. C.
McDaniel, William Maurice (A.B., Wofford College) Laurens, S. C.
McDonald, James Flournoy (B.A., Randolph-Macon College) Aldie, Va.
McCoy, Betty Frances (A.B., Huntingdon College) Atmore, Ala.
McKinney, Brown Thompson (B.S., Appalachian State Teachers College) Spruce Pine, N. C.
McLeod, George Bumgarner (A.B., Lenoir-Rhyne College) Lenoir, N. C.
McRae, Stuart Irwin (A.B., LaGrange College) College Park, Ga.
McSpadden, Royce Lynn (A.B., Hendrix College) Jacksonville, Ark.
Maness, Tracy Aubrey (A.B., Wilmington College) Sanford, N. C.
Mann, Milton Thomas (B.S., East Carolina College) Townsville, N. C.
Martin, William Jack (B.S., Mississippi State College) Greenwood, Miss.
Mason, John Allen (B.A., West Virginia Wesleyan College) Grafton, W. Va.
Mathews, Bill Ralph (B.A., Baylor University) Midland, Texas.
Mathis, G. Ray (A.B., Birmingham-Southern College) Boaz, Ala.
Midgett, Peleg Dameron III (A.B., Duke University) Engelhard, N. C.
Moore, Dwight William (A.B., Elon College) Madison, N. C.
Moore, Edward Lee (A.B., Davidson College) North Wilkesboro, N. C.
Moore, Robert Lee (A.B., Duke University) Spindale, N. C.
Morgan, Lewis Hunter (B.A., Randolph-Macon College) Portsmouth, Va.
Moss, Aaron Ward (A.B., High Point College) Gastonia, N. C.
Moss, Oscar Ray (A.B., Pfeiffer College) Kannapolis, N. C.
Myers, Leslie Milburn (A.B., Kentucky Wesleyan College) Scottsville, Ky.
Norris, Gene Austin (B.S., Clemson College) Conway, S. C.
Northup, Richard Earl (B.A., Simpson College) Ottumwa, Iowa
Overcash, Robert D. (A.B., Atlantic Christian College) Durham, N. C.
Overcash, Ronald A. (A.B., Asbury College) Stokesdale, N. C.
Owen, Travis Winefred (A.B., Pembroke State College) Roxboro, N. C.
Palmertree, Duran McClendon (B.A., University of Mississippi) Kilmichael, Miss.
Parvin, James Burbank (A.B., Atlantic Christian College) Durham, N. C.
Penick, John Jacob (A.B., Wofford College) Salisbury, N. C.
Penry, Herbert Talmadge, Jr. (A.B., High Point College) Seagrove, N. C.
Perkins, Merrill Gilford (A.B., High Point College) Bunn, N. C.
Petersen, Richard Hubbard (A.B., Dartmouth College) New Haven, Conn.
Peterson, Jather L., Jr. (A.B., High Point College) Vanceboro, N. C.
Polk, Norman Keith, Jr. (B.S., College of Charleston) Bennettsville, S. C.
Ponder, Reginald W. (B.S., North Carolina State College) Raleigh, N. C.
Porter, Ernest Ray (B.A., Millsaps College) Rose Hill, Miss.
Ragsdale, Anne Marie (A.B., Winthrop College) Easley, S. C.
Randolph, F. Roderick (A.B., University of North Carolina) Marion, N. C.
Ratliff, Betty Howell (B.M., Mississippi State College for Women) Clinton, Miss.
Reeves, Joseph M. (B.A., University of Tennessee) Marshall, N. C.
Rhiner, Etheridge Merrell (A.B., Atlantic Christian College) Henderson, N. C.
Riggs, Bobby Eugene (A.B., University of North Carolina) Mebane, N. C.
Riley, Henry Elwood, Jr. (B.A., Randolph-Macon College) Roanoke, Va.
Ripley, Orville Howard (B.A., University of Florida) Miami, Fla.
Roach, Edwin Lee (A.B., Berea College) Lake Helen, Fla.
Rush, James Paul (B.A., Millsaps College) Lake, Miss.
Sabiston, William Devine III (A.B., University of North Carolina) Carthage, N. C.
Sasamori, Takemi (B.A., Aoyama University) Tokyo, Japan
Scales, Thomas Carlyle (B.A., Huntingdon College) Mobile, Ala.
Schadt, David Byrl (A.B., Baker University) St. Joseph, Mo.
Schmitz, Lamar Halder (B.S., Mississippi Southern College) Kreole, Miss.
Sellers, Harry Russell, Jr. (A.B., Duke University) Brevard, N. C.
Sharpe, William Gray (A.B., Duke University) Elm City, N. C.
Shumaker, James David (A.B., Pfeiffer College) Salisbury, N. C.
Sikkelee, Albert Drake (B.A., Randolph-Macon College) Richmond, Va.
Singleton, James Cooper (A.B., High Point College) Thomasville, N. C.
Smith, Martha Ann (A.B., Duke University) Durham, N. C.
Smith, Norman F. (A.B., Lambuth College) Bemis, Tenn.
Smith, Robert Moir Jr. (A.B., Davidson College) Mt. Airy, N. C.
Snow, Keith Chadwick (A.B., Drew University) Gloversville, N. Y.
Sparks, Charles E. (A.B., High Point College) Raleigh, N. C.
Sparrer, Paul Bernard (B.A., Randolph-Macon College) Seaford, Va.
Spears, William Rufus (A.B., American International College) Concord, N. C.
Stafford, Sidney Earl (A.B., Mississippi Southern College) Hattiesburg, Miss.
Stanford, James Carlton (A.B., Asbury College) Altemahaw, N. C.
Stewart, Carl Oscar (B.A., Shepherd College) Oakton, Va.
Stith, William Hewlett Jr. (B.A., University of Richmond) Lynnhaven, Va.
Stone, Ronald Howard (B.D., Yale University) Knoxville, Tenn.

Summey, Raymond Clifton (A.B., High Point College) Dallas, N. C.
Temple, Edward Oscar Jr. (B.A., Guilford College) Winston-Salem, N. C.
Thompson, James Frederick Jr. (A.B., Pfeiffer College) Laurinburg, N. C.
Thompson, Leo Clifford (A.B., Duke University) Roxboro, N. C.
Townsend, David Kenneth (B.S., Clemson College) Bennettsville, S. C.
Vaiden, Gerald Merrit Jr. (B.S., Virginia Polytechnic Institute) Hopewell, Va.
Villers, William Robert (B.S., West Virginia University) Moundsville, W. Va.
Vinson, Richard P. (B.S., Mississippi Southern College) Magee, Miss.
Walton, Woodrow Edward (B.A., Texas Christian University) Fort Worth, Tex.
Watson, William Hunt (A.B., Lambuth College) Arlington, Tenn.
Way, John G. (A.B., Wofford College) Greenwood, S. C.
Weaver, Walter Parker (A.B., Duke University) Durham, N. C.
Webster, William Osborne (B.A., Emory and Henry College) Sweetwater, Tenn.
Weingart, Richard Ernest (B.A., Hampden-Sidney College) Alexandria, Va.
Wesley, Arthur Lewis (A.B., Marion College, Th.B., People's Bible College) Durham, N. C.
Whitehurst, Walter Allen (B.A., Randolph-Macon College) Princess Anne, Va.
Wilkinson, Larry Dale (A.B., High Point College) Charlotte, N. C.
Will, William Ashley (B.A., West Virginia Wesleyan College) Johnstown, Pa.
Williams, Edwin Winston Jr. (B.A., Millsaps College) Belzoni, Miss.
Williams, Evertt Vaudry (A.B., Pfeiffer College) Randleman, N. C.
Williams, Nellie Lee (A.B., Western Maryland College) Grafton, W. Va.
Wilson, Ben Horace III (B.A., Baldwin-Wallace College) Berea, Ohio
Wilson, Gerald Lee (A.B., Davidson College) Winston-Salem, N. C.
Wilson, Harold Thomas (A.B., Ohio University) Portsmouth, Ohio
Yarbrough, Jack B. (A.B., Pfeiffer College) Concord, N. C.
Young, Charles Garland (A.B., High Point College) Charlotte, N. C.
Young, Robert Terry (A.B., University of North Carolina) Durham, N. C.
Yount, David Adams (A.B., Lenoir-Rhyne College) Granite Falls, N. C.
Zellner, James Hubert (A.B., Huntingdon College) Mobile, Ala.
Zinn, Grover Alfonso Jr. (B.A., Rice Institute) El Dorado, Ark.

Students Enrolled in the Department of Religion of The Graduate School of Arts and Sciences 1959-1960

Alexander, Joseph C. Jr. (A.B., Duke University; B.D., Duke Divinity School), Kinston, N. C.
Anderson, James William (B.S., Tulane University; B.D., Austin Presbyterian Theological Seminary), Pittsboro, N. C.
Blane, Andrew Quarles (A.B., Centre College; B.D., Southern Baptist Theological Seminary; M.A., Cambridge University, England), Hopkinsville, Ky.
Brown, Kenneth Lee (A.B., McPherson College; B.D., Bethany Biblical Seminary), Wichita, Kans.
Cain, Glen T. (A.B. and M.A., Baylor University; B.D. and Th.M., Southwestern Baptist Theological Seminary), Alba, Tex.
Campbell, Jefferson Holland (A.B., Southern Methodist University; B.D., Perkins School of Theology), Beaumont, Texas
Cochran, Bernard Harvey (A.B., Stetson University; B.D., and Th.M., Southeastern Baptist Theological Seminary), Arcadia, Fla.
Cook, Donald Eugene (A.B., Furman University; B.D., and Th.M., Southeastern Baptist Theological Seminary), Pamplico, S. C.
Cresson, Bruce Collins (A.B., Wake Forest College; B.D., and Th.M., Southeastern Baptist Theological Seminary), Hillsboro, N. C.
Doermann, Ralph Walter (A.B., Capital University; B.D., Capital University Seminary), Columbus, Ohio
Efird, James Michael (A.B., Davidson College; B.D., Louisville Presbyterian Seminary), Kannapolis, N. C.
Finnie, Gordon Esley (A.B., Lambuth College), Whitehaven, Tenn.
Freeman, Jane Gilbert (A.B., Wake Forest College), Salisbury, N. C.
Gragg, Alan Wayne (A.B., Furman University; B.D., Southern Baptist Theological Seminary), Brunswick, Ga.
Hagwood, James Oscar (A.B., University of North Carolina; B.D. and Th.M., Southeastern Baptist Theological Semiuary), Gibsonville, N. C.
Hailey, James Russell (A.B., Elon College), Leaksville, N. C.
Hall, Thor (A.B., Oslo University; B.D., Scandinavian Methodist Seminary; M.R.E., Duke Divinity School), Oslo, Norway
Hodges, Louis Wendell (A.B., Millsaps College; B.D., Duke Divinity School), Eupora, Miss.
Hood, Charles Ellsworth (A.B., Syracuse University; B.D., Duke Divinity School), Freehold, N. Y.
Howell, John Edmund (A.B., Stetson University; B.D., Yale Divinity School), Jacksonville, Fla.
Hummel, Nancy (A.B., College of William and Mary), Norton, Va.
James, Robison Brown (A.B., University of Alabama; B.D., Southern Baptist Theological Seminary), Tuscaloosa, Ala.
Kliever, Lonnie Dean (A.B., Hardin-Simmons University; B.D., Union Theological Seminary), Fort Worth, Tex.
Kraus, Clyde Norman (A.B., Goshen College; B.D., Goshen Biblical Seminary; Th.M., Princeton Theological Seminary), Goshen, Ind.

Lacy, David Allen III (A.B., Duke University), Dallas, Tex.
Ludlow, Luther Spencer, Jr. (A.B., Mercer University; B.D., Union Theological Seminary), Miami, Fla.
MacGorman, John William (A.B., University of Texas; B.D. and Th.D., Southwestern Theological Seminary), Fort Worth, Tex.
Magill, Samuel Hays (A.B., University of North Carolina; B.D., Yale Divinity School), Chapel Hill, N. C.
Millholland, Donald William (A.B., Duke University; B.D., Union Theological Seminary), Indianapolis, Ind.
Mitchell, Frank Joseph (B.S., Alabama Polytechnic Institute; B.D., Duke Divinity School), Fairfield, Ala.
Murray, Noland Patrick (A.B., Baylor University; B.D., Southern Baptist Theological Seminary), Harrison, Ark.
Porter, Calvin Lewis (A.B., and B.D., Phillips University), Hunter, Okla.
Rogers, Isabel Wood (A.B., Florida State University; M.A., University of Virginia; M.R.E., Presbyterian Assembly Training School), Tallahassee, Fla.
Shuford, George Washington (B.S., Lenoir Rhyne; B.D., Lutheran Theological Seminary), Durham, North Carolina
Smith, Harmon Lee Jr. (A.B., Millsaps College; B.D., Duke Divinity School), Holly Springs, Miss.
Sommer, Günter Friedrich (B.D., Theological Seminary of the Methodist Church, Frankfurt, Germany), Echterdingen-Stuttgart, Germany.
Thomas, Arthur Chester (A.B., Colgate University; B.D., Duke Divinity School), Auburn, N. Y.
Thomas, William West (A.B., Washington and Lee University; B.D., Yale Divinity School), Harrisonburg, Va.
Walker, William Oliver Jr. (A.B., Austin College; B.D., Austin Presbyterian Theological Seminary; M.A., University of Texas), Austin, Tex.
Weiss, Herold David (A.B., Southern Mississippi College; M.A., Potomac University), Buenos Aires, Argentina.
Williams, Donald Leigh (A.B., Baylor University; M.A., Southern Methodist University; B.D., Southern Baptist Theological Seminary), Fort Smith, Ark.
Wilson, William Riley (B.A., Southern Methodist University, B.D., Austin Presbyterian Theological Seminary) Dallas, Tex.
Womack, Sam Jones Jr. (A.B., Florida Southern College; B.D., Duke Divinity School), Lakeland, Fla.
Zink, James Keith (A.B., M.A., Harding College; B.D., Crozer Theological Seminary), Tulsa, Okla.

Summer Session 1959

B.D. Candidates
(WITHOUT DUPLICATION)

Bowman, Giles Oren (A.B., High Point College) Winston-Salem, N. C.
Braswell, Mae Baldwin (A.B., Greensboro College) Mt. Gilead, N. C.
Hancock, Oros Leo Jr. (A.B., Queens College) Charlotte, N. C.
Jones, Robert Ted (A.B., Emory and Henry College) Maybeury, W. Va.
Newton, John Leon (A.B., High Point College) McColl, S.C.
Osteen, Edward Powell (A.B., Wofford College) Rockingham, N. C.
Streetman, Robert Francis (B.A., Millsaps College) Durant, Miss.
Wesley, James Lee Rue (A.B., Union College) Corbin, Ky.
Wilkinson, Howard Ray (A.B., Wofford College) Charlotte, N. C.

Summer Session 1959

Graduate Students in Religion
(WITHOUT DUPLICATION)

Boyd, Wayne Elden (B.S., Carnegie Institute of Technology; B.D., Oberlin College), Durham, N. C.
Chalker, William Houston (A.B., Maryville College; B.D., McCormick Theoolgical Seminary), Birmingham, Ala.
Hill, Samuel Smythe, Jr. (A.B., Georgetown College; M.A., Vanderbilt University; B.D., Southern Baptist Theological Seminary), Versailles, Ky.
Hoyt, William R. (A.B., Davidson College; B.D., Columbia Theological Seminary), Gadsden, Ala.
Shriver, George Hite Jr. (A.B., Stetson University; B.D., Southeastern Theological Seminary), Jacksonville, Fla.
Stewart, John William (A.B., University of Georgia; B.D., Texas Christian University), Carrollton, Tex.
Wamble, Gaston Hugh (A.B., Mercer University; B.D., and Th.D., Southern Baptist Theological Seminary), Cairo, Ga.
Webb, Omri Kenneth Jr. (A.B., The Citadel; B.D., Southern Baptish Theological Seminary), Greenville, S. C.
White, James Floyd (A.B., Harvard University; B.D., Union Theological Seminary), Menlo Park, Calif.

Enrollment Summary

Divinity School Students, 256, academic year 1959-1960; Summer Session (without duplication) 9; Graduate School students, 44, academic year 1959-1960; Summer Session (without duplication) 9; Total: 318

INSTITUTIONS REPRESENTED

Duke University, 33; High Point College, 27; Randolph-Macon College, 16; Wofford College, 15; Elon College, 13; Pfeiffer College, 9.

The following 7 each: Marshall College, Southern Baptist Theological Seminary.

The following 6 each: Asbury College, Lambuth College, Millsaps College.

The following 5 each: Atlantic Christian College, Davidson College, Emory and Henry College, Lenoir-Rhyne College, Southeastern Theological Seminary, University of North Carolina.

The following 4 each: Mississippi Southern College, Union Theological Seminary (New York).

The following 3 each: Austin Presbyteriau Theological Seminary, Birmingham-Southern College, Catawba College, Clemson College, Florida State University; Hendrix College; Huntingdon College; Lynchburg College, University of Oklahoma; Yale Divinity School.

The following 2 each: American University, Baker University, Baldwin-Wallace College, Berea College, College of William and Mary, East Carolina College, Greensboro College, Hampden-Sydney College College, Kentucky Wesleyan College, McMurry College, Morningside College, Salem College, Southwestern Baptist Theological Seminary, Texas Christian University, University of Richmond, Virginia Polytechnic Institute, Wake Forest College, West Virginia Wesleyan College.

The following 1 each: American International College, Anderson College, Aoyama University, Appalachian State Teachers College, Augustana College, Baylor University, Bethany Bible Seminary, Bridgeport University, Cambridge University, Capital University Seminary, Columbia College, Columbia Theological Seminary, Columbia University, Concord College, Crozer Theological Seminary, Dartmouth College, Drew University, East Tennessee State College, Florida Southern College, Georgia State College, Guilford College, Iowa State College, LaGrange College, Louisville Presbyterian Seminary, Lutheran Theological Seminary, Mansfield College, Marion College, McCormick Theological Seminary, Mississippi State College, Mississippi State College for Women, Morris Harvey College, North Carolina State College, Oberlin College, Ohio University, Ohio Wesleyan University, Olivet Nazarene College, Paedagogic College, Pembroke State College, Perkins School of Theology, Phillips University, Potomac University, Presbyterian Assembly Training School, Princeton Theological Seminary, Queen's College, Rice Institute, Rutgers University, Shepherd College, Simpson College, Southeast Missouri State College, Southwestern College, Springfield College, Taylor University, Theological Seminary of the Methodist Church, Union College, Union Theological Seminary (Philippines), University of California, University of Cincinnati, University of Florida, University of Michigan, University of Mississippi, University of South Carolina, University of Tennessee, University of Texas, West Virginia University, Wheaton College, Wilmington College, Winthrop College, Yale University.

DENOMINATIONS REPRESENTED

Denomination	*Divinity*	*Graduate*	*Total*
Methodist	241	15	256
Presbyterian	2	8	10
Baptist	4	19	23
Congregational Christian	11	1	12
Disciples of Christ	3	2	5
Church of God	2		2
Evangelical Lutheran		2	2
Church of the Brethren		1	1
Church of Christ		1	1
Church of Christ (Japan)	1		1
Episcopal		1	1
Evangelical United Brethren		1	1
Mennonite		1	1
Seventh Day Adventist		1	1
Church of the Nazarene	1		1
	265	53	318

GEOGRAPHICAL DISTRIBUTION

North Carolina, 126; Virginia, 33; South Carolina, 19; West Virginia, 15, Florida, 14, Mississippi, 14; Texas, 13; Alabama, 11; Tennessee, 11; Kentucky, 6; Arkansas, 5; New York, 5; Ohio, 5; Oklahoma, 5; Pennsylvania, 5; Georgia, 4; New Jersey, 3; California, 2; Connecticut, 2; Germany, 2; Indiana, 2; Japan, 2; Kansas, 2; Norway, 2; Argentina, 1; Delaware, 1; Iowa, 1; Korea, 1; Louisiana, 1; Missouri, 1; Montana, 1; Philippines, 1; Washington, 1; Washington, D. C., 1.

STATES: 28

FOREIGN COUNTRIES: 6

BULLETIN
OF
DUKE UNIVERSITY

Catalogue Number

1959-1960

ANNOUNCEMENTS FOR 1960-1961

VOLUME 32 June, 1960 NUMBER 8

Annual Bulletins

For General Bulletin of Duke University, apply to *The Registrar,* Duke University, Durham, N. C.

For Bulletin of Information for Prospective Students, apply to *The Registrar,* Duke University, Durham, N. C.

For Bulletin of Undergraduate Instruction, apply to *The Registrar,* Duke University, Durham, N. C.

For Bulletin of the College of Engineering, apply to *The Registrar,* Duke University, Durham, N. C.

For Bulletin of The Graduate School of Arts and Sciences, apply to *The Dean of the Graduate School,* Duke University, Durham, N. C.

For Bulletin of The School of Forestry, apply to *The Dean of the School of Forestry,* Duke University, Durham, N. C.

For Bulletin of The School of Law, apply to *The Dean of the School of Law,* Duke University, Durham, N. C.

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For Bulletin of The School of Nursing, apply to *The Dean of the School of Nursing,* Duke University, Durham, N. C.

For Bulletin of The Divinity School, apply to *The Dean of the Divinity School,* Duke University, Durham, N. C.

For Bulletin of The Summer Session, apply to *The Director of the Summer Session,* Duke University, Durham, N. C.

For Report of the President, apply to *President's Office,* Duke University, Durham, N. C.

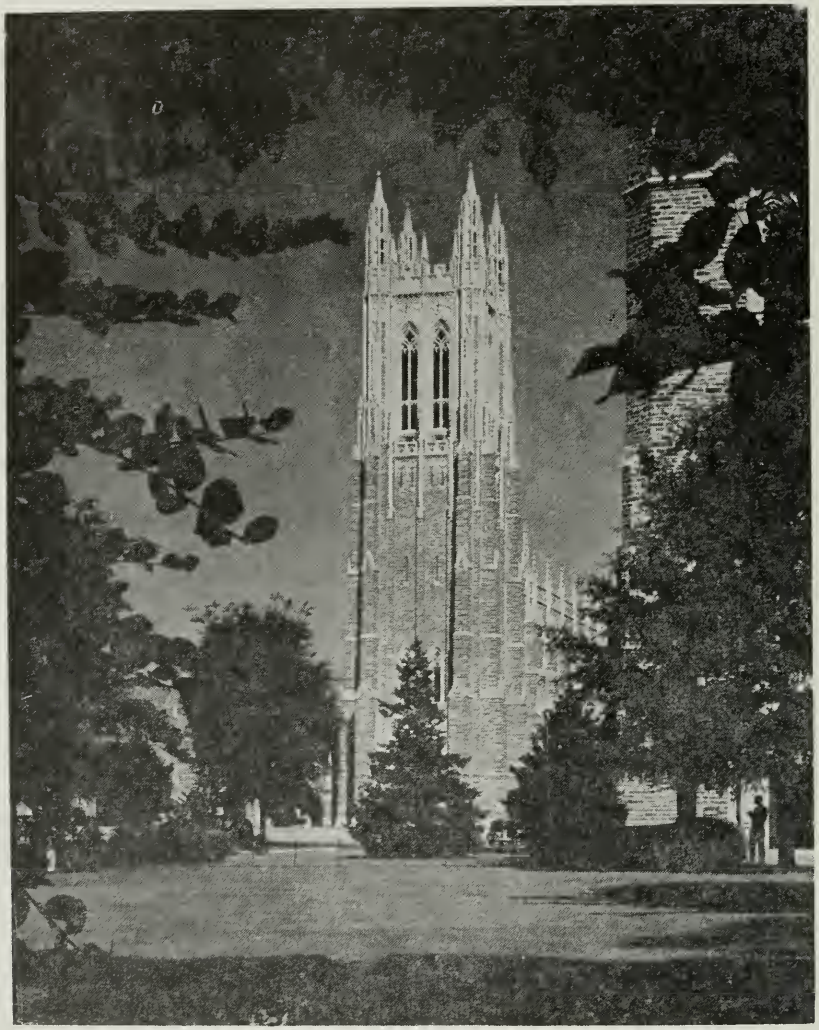
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DUKE UNIVERSITY

General Catalogue



Announcements for 1960-1961



The Chapel

BULLETIN

OF

DUKE UNIVERSITY



CATALOGUE NUMBER

1959-1960

ANNOUNCEMENTS FOR 1960-1961

DURHAM, NORTH CAROLINA
1960

"I request . . . that great care and discrimination be exercised in admitting as students only those whose previous record shows a character, determination, and application evincing a wholesome and real ambition for life."

—James B. Duke.

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OCTOBER

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NOVEMBER

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DECEMBER

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31						

Calendar of the Colleges

1960

September	15.	Thursday, 7:30 p.m. Orientation begins: Assemblies for all new students entering Trinity College, the Woman's College, and the College of Engineering.
September	19.	Monday. Registration and matriculation of all students of Trinity College, the Woman's College, and the College of Engineering, who have not pre-registered.
September	21.	Wednesday. Final registration of pre-registered students.
September	22.	Thursday. Fall semester classes begin.
October	25.	Tuesday. Examination in English Usage.
November	5.	Saturday. Last day for reporting mid-semester grades.
November	23.	Wednesday, 12:30 p.m. Thanksgiving recess begins.
November	28.	Monday, 8:00 a.m. Classes are resumed.
December	11.	Sunday. Founders' Day.
December	17.	Saturday, 12:30 p.m. Christmas recess begins.

1961

January	3.	Tuesday, 8:00 a.m. Classes are resumed.
January	14.	Saturday, 12:30 p.m. Fall semester classes end.
January	17.	Tuesday. Final examinations begin.
January	27.	Friday. Final examinations end.
January	31.	Tuesday. Registration and matriculation of new students.
February	1.	Wednesday. Last day for matriculation for the spring semester.
February	2.	Thursday. Spring semester classes begin.
March	15.	Wednesday. Last day for reporting mid-semester grades.
March	25.	Saturday, 12:30 p.m. Spring recess begins.
April	4.	Tuesday, 8:00 a.m. Classes are resumed.
May	18.	Thursday, 5:00 p.m. Spring semester classes end.
May	20.	Saturday. Final examinations begin.
May	31.	Wednesday. Final examinations end.
June	3.	Saturday. Commencement begins.
June	4.	Sunday. Commencement Sermon.
June	5.	Monday. Graduating Exercises.

History

DUKE UNIVERSITY is built about a group of colleges which have their roots deep in the past. It was founded more than one hundred years ago when a number of earnest citizens from Randolph and adjacent counties assembled in a log school house to organize an educational society. They wished to provide lasting support for the local academy founded a few months before by an energetic son of North Carolina, Brantley York.

Moved by "no small share of philanthropy and patriotism," these men set forth their belief "that ignorance and error are the bane not only of religious but also of civil society" and that they "rear up almost an impregnable wall between man and the happiness he so ardently pants after." On that basis they formally adopted a constitution for the Union Institute Society. Thus in February, 1839, the academy became Union Institute. Twelve years later the Institute was reorganized as Trinity College. In 1892 it was moved from the fields of Randolph County to the growing city of Durham. Thirty-two years later the College grew into Duke University. With increasing enrollment and the development of specialized needs the Woman's College was formed in 1925 and the College of Engineering in 1938.

As the University developed around the core of the colleges, the Graduate School of Arts and Sciences expanded in number of students and in areas of instruction and research; the School of Law of Trinity College became the Duke University School of Law; and other professional schools were established. The Divinity School was organized in 1926, the School of Medicine, and the School of Nursing in 1930, and the School of Forestry in 1938.

From academy to university the basic principles have remained constant. The University motto, *Eruditio et Religio,* reflects a fundamental faith in the union of knowledge and religion, the advancement of learning, the defense of scholarship, the love of freedom and truth, a spirit of tolerance, and a rendering of the greatest service to the individual, the state, the nation, and the church. Through changing generations of students the objective has been to encourage each individual to achieve to the extent of his capacities an understanding and appreciation of the world in which he lives, his relationship to it, his opportunities, and his responsibilities.

Government

I. THE INDENTURE OF TRUST BY WHICH THE UNIVERSITY WAS CREATED

Among the provisions of James B. Duke's Indenture of Trust was an educational institution to be known as Duke University, to the building and support of which he made provision at the time of execution of the Indenture and later by additions thereto by the operation of his Will. In respect to Duke University the Indenture contains the following provisions:

I. (In Article FOURTH) The Trustees hereunder are hereby authorized and directed to expend as soon as reasonably may be not exceeding Six Million Dollars of the corpus of this trust in establishing at a location to be selected by them within the State of North Carolina an institution of learning to be known as Duke University, for such purpose to acquire such lands and erect and equip thereon such buildings according to such plans as the Trustees may in their judgment deem necessary and adopt and approve for the purpose to cause to be formed under the laws of such state as the Trustees may select for the purpose a corporation adequately empowered to own and operate such properties under the name of Duke University as an institution of learning according to the true intent hereof, and to convey to such corporation when formed the said lands, buildings and equipment upon such terms and conditions as that such corporation may use the same only for such purposes of such university and upon the same ceasing to be so used then the same shall forthwith revert and belong to the Trustees of this trust as and become a part of the corpus of this trust for all the purposes thereof.

However, should the name of Trinity College, located at Durham, North Carolina, a body politic and incorporate, within three months from the date hereof (or such further time as the Trustees hereof may allow) be changed to Duke University, then, in lieu of the foregoing provisions of this division "FOURTH" of this Indenture as a memorial to his father, Washington Duke, who spent his life in Durham and whose gifts, together with those of Benjamin N. Duke, the brother of the party of the first part, and of other members of the Duke family, have so largely contributed toward making possible Trinity College at that place, he directs that the Trustees shall expend of the corpus of this trust as soon as reasonably may be a sum not exceeding Six Million Dollars in expanding and extending said University, acquiring and improving such lands, and erecting, removing, remodeling and equipping such buildings, according to such plans, as the Trustees may adopt and approve for such purpose to the end that said Duke University may eventually include Trinity College as its undergraduate department for men, a School of Religious Training, a School for Training Teachers, a School of Chemistry, a Law School, Co-ordinate College for Women, a School of Business Administration, a Graduate School of Arts and Sciences, a Medical School and an Engineering School, as and when funds are available.

II. (In Article FIFTH) Thirty-two per cent of said net amount not retained as aforesaid for addition to the corpus of this trust shall be paid to that Duke University for which expenditures of the corpus of the trust shall have been made by the Trustees under the "Fourth" division of this Indenture so long as its name shall be Duke University and it shall not be operated for private gain, to be utilized by its Board of Trustees, in defraying its administration and operating expenses, increasing and improving its facilities and equipment, the erection and enlargement of buildings and the acquisition of additional acreage for it, adding

to its endowment or in such other manner for it as the Board of Trustees of said institution may from time to time deem to be of its best interests, provided that in case such institutions shall incur any expense or liability beyond provisions already in sight to meet same, or in the judgment of the Trustees under this Indenture be not operated in a manner calculated to achieve the results intended hereby the Trustees under this Indenture may withhold the whole or any part of such percentage from said institution so long as such character of expense or liabilities or operation shall continue, such amounts so withheld to be in whole or in part either accumulated and applied to the purposes of such University in any future year or years, or utilized for the other objects of this Indenture, or added to the corpus of this trust for the purpose of increasing the principal of the trust estate, as the Trustees may determine.

III. (In Article SEVENTH) I have selected Duke University as one of the principal objects of this trust because I recognize that education, when conducted along sane and practical, as opposed to dogmatic and theoretical, lines, is, next to religion, the greatest civilizing influence. I request that this institution secure for its officers, trustees, and faculty, men of such outstanding character, ability, and vision as will insure its attaining and maintaining a place of real leadership in the educational world, and that great care and discrimination be exercised in admitting as students only those whose previous records shows a character, determination, and application evincing a wholesome and real ambition for life. And I advise that the courses at this institution be arranged, first, with special reference to the training of preachers, teachers, lawyers and physicians, because these are most in the public eye, and by precept and example can do most to uplift mankind, and second, to instruction in chemistry, economics, and history, especially the lives of the great of earth, because I believe that such subjects will most help to develop our resources, increase our wisdom and promote human happiness.

IV. (In Article THIRD) As respects any year or years and any purpose or purposes for which this trust is created (except the payments hereinafter directed to be made to Duke University) the Trustees in their uncontrolled discretion may withhold the whole or any part of said incomes, revenues and profits which would otherwise be distributed under the "Fifth" division hereof, and either (1) accumulate the whole or any part of the amount so withheld for expenditures (which the Trustees are hereby authorized to make thereof) for the same purpose in any future year or years, or (2) add the whole or any part of the amounts so withheld to the corpus or the trust, or (3) pay, apply and distribute the whole or any part of said amounts to and for the benefit of any one or more of the other purposes of this trust, or (4) pay, apply and distribute the whole or any part of said amounts to or for the benefit of any such like charitable, religious or educational purpose within the State of North Carolina or the State of South Carolina, or any such like charitable hospital purpose which shall be selected therefor by Trustees called for the purpose, complete authority and discretion in and for such selection and utilization being hereby given the Trustees in the premises.

2. THE CHARTER OF THE UNIVERSITY

SECTION 1. That A. P. Tyer, J. H. Southgate, B. N. Duke, G. A. Oglesby, V. Ballard, J. A. Long, J. F. Bruton, J. N. Cole, F. A. Bishop, J. G. Brown, C. W. Toms, J. W. Alspaugh, W. R. Odell, J. A. Gray, F. Stikeleather, Kope Elias, S. B. Turrentine, P. H. Hanes, T. F. Marr, G. W. Flowers, M. A. Smith, R. H. Parker, W. J. Montgomery, F. M. Simmons, O. W. Carr, R. A. Mayer, N. M. Jurney, Dred Peacock, B. B. Nicholson, W. G. Bradsher, E. T. White, T. N. Ivey, J. B. Hurley, R. L. Durham, W. C. Wilson, and their associates and successors shall be, and continue as they have been, a body politic and corporate under the name and style of DUKE UNIVERSITY, and under such name and style shall have perpetual existence and are hereby invested with all the property and rights of property which now belong to the said corporation, and said corporation shall henceforth and perpetually, by the name and style of DUKE UNIVERSITY, hold and use all the authority, privileges, and possessions it had or exercised under any former title and name, and be subject to all recognized legal liabilities and obligations now outstanding against said corporations.

SEC. 2. That such corporation is authorized to receive and hold by gift, devise, purchase or otherwise, property, real and personal, to be held for the use of said University and its dependent schools or for the use of either or both (as may be designated in the conveyance or will).

SEC. 3. That the Trustees shall be thirty-six in number, of whom twelve shall be elected by the North Carolina Conference of the M. E. Church, South; twelve by the W N. C. Conference of the said church; and twelve by the graduates of said University; *Provided, however,* That no person shall be elected a Trustee till he has first been recommended by a majority of the Trustees present at a regular meeting; and the Trustees shall have power to remove any member of their body who may remove beyond the boundary of the State or who may refuse or neglect to discharge the duties of a Trustee. The term of office of Trustees shall be six years, and they shall be so arranged that four Trustees shall be elected by each Conference and four by the graduates every two years. The Trustees shall regulate by bylaws the manner of election of the Trustees to be chosen by the graduates. Should there exist a vacancy by death, resignation, or otherwise of any Trustee, the same shall be filled for the unexpired term by the Board of Trustees. That the present Trustees shall continue and remain in office during the term for which they have been heretofore respectively elected.

SEC. 4. That the said corporation shall be under the supervision, management and government of a president and such other persons as said Trustees may appoint; the said president, with the advice of other persons so appointed, shall from time to time make all needful rules and regulations for the internal government of said University and prescribe the preliminary examinations and terms and conditions on which pupils shall be received and instructed.

SEC. 5. That said Trustees shall have power to make such rules, regulations, bylaws not inconsistent with the Constitution of the United States and of this State, as may be necessary for the good government of said University and management of the property and funds of the same.

SEC. 6. That the Trustees shall have power to fix the time of holding their annual and other meetings, to elect a president and professors for said University, to appoint an executive committee to consist of seven members, which committee shall control the internal regulations of said University and fix all salaries and emoluments, and to do all other things necessary for an institution of learning not inconsistent with the laws of this State and of the United States.

SEC. 7. That the Faculty and Trustees shall have the power of conferring such degrees and marks of honor as are conferred by colleges and universities generally; and that five Trustees shall be a quorum to transact business.

SEC. 8. That all laws and parts of laws or of the charter heretofore granted which are in conflict with this act are hereby repealed.

SEC. 9. That this act shall be in force from and after its ratification and acceptance by the Board of Trustees.

3. THE BYLAWS OF THE UNIVERSITY

1. AIMS OF THE UNIVERSITY. The aims of Duke University are to assert a faith in the eternal union of knowledge and religion set forth in the teachings and character of Jesus Christ, the son of God; to advance learning in all lines of truth: to defend scholarship against all false notions and ideals; to develop a Christian love of freedom and truth; to promote a sincere spirit of tolerance; to discourage all partisan and sectarian strife; and to render the largest permanent service to the individual, the state, the nation, and the church. Unto these ends shall the affairs of this University always be administered.

2. THE UNIVERSITY TRUSTEES, THEIR MEETINGS AND THEIR OFFICERS. The Alumni Trustees, nominated by the Board as provided for in the Charter, are elected by the Alumni Association. The officers of the Board are chairman, vice-chairman, and recording secretary. They are elected by the Trustees at their annual meeting to serve one year or until their successors are elected and qualify. The chairman calls to order and presides, at all meetings of the Board, calls extraordinary meetings when, in his judgment, such meetings may be necessary, and represents

the Trustees at public meetings of the University. He is ex-officio member of the Executive Committee. In the absence of the chairman, the vice-chairman calls to order and presides over meetings of the Board, but does not perform any of the other duties of the chairman unless ordered to do so by the Board or the Executive Committee. The recording secretary records the minutes of all the meetings, does the correspondence, and is the custodian of the records and other documents that may belong to the Board.

3. THE EXECUTIVE COMMITTEE. The Executive Committee consists of seven members, three of them from the University Trustees, including the chairman of the Board ex-officio, three from the Endowment Trustees, and the President of the University ex-officio. It performs the duties set out for it in the charter—namely, controls the internal regulations of the University and fixes all salaries and emoluments. It has all the powers of the Board of Trustees in the interims between meetings of the Board of Trustees except the nomination of Trustees and election of members of the Executive Committee; however, appointment of officers of the University by the Executive Committee is subject to the approval of the University Trustees. The Executive Committee is expressly empowered to appoint an Investment Committee and to give such Committee such powers and duties, as in the judgment of the Executive Committee, may seem fit. The Executive Committee is elected by the University Trustees, three of them on nomination of the Endowment Trustees, nad the Committee elects its own officers who are chairman and recording secretary. It meets once a month (unless otherwise determined by the Committee) and oftener when necessary and by its own resolution sets its time and date of meetings except that special meetings are called by its chairman upon three or more days written or telegraphic notice to the members of the Committee. The Committee, through its chairman, once a year makes a report to the annual meeting of the University Trustees.

4. OFFICERS OF THE UNIVERSITY. The officers of the University are a president, three vice-presidents, a business manager, a comptroller, a treasurer, a dean of the University, and such other deans as may be needed, a recording dean or registrar, and a secretary who is also secretary of the faculty. There may be also a chancellor and a vice-chancellor. Whenever it may seem wise, one person may hold more than one office.

PRESIDENT. The President of the University calls and presides at all the meetings of the Faculties, except as otherwise provided in these bylaws, and sees that the laws and regulations of the Executive Committee and the Trustees affecting the administration and work of the University are carried out. He has direction of the discipline and work of the University and, except as otherwise provided in these bylaws, appoints all committees of the Faculties. Anything in these bylaws to the contrary notwithstanding, the President may veto any action of any faculty or committee or agency thereof. However, in every instance he shall submit to the appropriate faculty, committee or agency in writing his reasons for setting aside their action, and the secretary of such faculty shall record his reasons in the record book of such faculty. The President makes an annual report to the Trustees of the work, conditions, and needs of the University, and of other matters that may be of concern to it or to the cause of higher education. He nominates all members of the Faculties and represents them at all public meetings of the University. He is an ex-officio member of the Executive Committee and acts, unless the Trustees designate the Chancellor of the University for the purpose, as a medium of communication between the University Trustees and the Endowment Trustees.

CHANCELLOR. There may be a Chancellor of the University. If the Trustees appoint such an officer, he shall be selected for this office because of his long and faithful service to the University. Such an officer, if appointed, is a high officer of the University. He may be designated by the Trustees as the medium of communication between the University Trustees and the Endowment Trustees and, when he is so designated, the President does not act in such a capacity. He is available, when requested by the President, to render all possible services in an advisory capacity. He has such other duties as may be delegated to him from time to time by the Trustees.

VICE-CHANCELLOR. There may be a Vice-Chancellor of the University. If the

Trustees appoint such an officer he shall be selected because of his long and faithful service to the University. When requested by the Chancellor, he performs the duties designated to the Chancellor by the Trustees. He is available, when requested by the Chancellor or President, to render all possible services in an advisory capacity. He has also such other duties as may be delegated to him from time to time by the Trustees.

VICE-PRESIDENTS. The three Vice-Presidents of the University have supervision of the work of the University in the divisions of (a) education, (b) public relations, and (c) student life. In the absence of the President, Vice-Presidents in the above order may perform such duties of the President as may demand immediate attention.

BUSINESS MANAGER. The Business Manager has the custody of all property of the University except cash and securities. He is responsible to an Administrative Committee and through such committee to the Trustees, either directly or through the Executive Committee, for all matters pertaining to the business affairs of the University except the investment of funds and is required to make monthly reports through such Administrative Committee to the Executive Committee and annual reports through the Administrative Committee to the Trustees concerning his accounts and the property in his charge. Such Administrative Committee is composed of not less than three nor more than five persons, three of whom are the President of the University as Chairman, the Business Manager and a Vice-President selected from time to time by the Trustees or the Executive Committee. The Executive Committee has power to determine, within the limit set, the number to be added to or removed from membership in the committee and in its judgment to make selection of the persons to be so added or so removed. The Business Manager receives annually from the Comptroller a budget of expected receipts and disbursements and upon the approval of the Administrative Committee submits a budget to the Executive Committee for consideration and adoption. Upon such adoption he, acting through the Comptroller, is responsible primarily for the operation of the budget. He nominates to the Executive Committee any and all assistants required by him to do well the duties of his office. The Business Manager shall be required to give bond in such amount as may be designated by the Trustees or the Executive Committee for the faithful performance of his duties.

COMPTROLLER. The Comptroller prepares annually, or causes to be prepared, a budget of expected receipts and disbursements and submits same to the Business Manager for the approval of the Administrative Committee and submission to the Executive Committee for consideration and adoption. He is responsible primarily to the Business Manager for the operation of the budget and assists him in every way when called upon so to do, and has such other powers and duties as the title of his office may imply, including responsibility for the financial records of the University. The Comptroller shall be required to give bond in such amount as may be designated by the Trustees or the Executive Committee for the faithful performance of his duties.

TREASURER. The Treasurer has primary responsibility for the care and custody of all securities and for the receipt and disbursement of all funds of the University. He makes an annual report of his accounts to the Trustees and such reports as may be required of him from time to time by the Executive Committee. He makes reports also to the Business Manager monthly and oftener when required. He nominates to the Executive Committee any and all assistants required by him to do well the duties of his office including the nomination of one or more Assistant Treasurers, which officers shall be responsible primarily to him. The Treasurer and his assistants shall be required to give bond in such amount as may be designated by the Trustees or the Executive Committee for the faithful performance of their duties.

SECRETARY. The Secretary of the University has custody of the corporate seal of the University and affixes and attests same when circumstances require and the Trustees or the Executive Committee so direct. He is secretary of the Faculty also, attends its meetings and makes permanent records of actions and transactions at such meetings. He has such other duties and responsibilities as his title suggests and may be delegated to him from time to time by the appropriate authorities. There may be appointed also, from time to time, such Associate and/or Assistant

Secretaries as may be required to perform the duties of the Secretary in his absence or inability to act.

5. FACULTIES. The University Faculty is composed of:

(a) The President and the Secretary of the University and such officers designated by the President as primarily responsible for instruction and research; and

(b) All persons of the rank of full instructor and above who are engaged in work for which recognized University degrees are awarded, and also members of the faculty emeriti.

The University Faculty in cooperation with the President and officers of the University, is responsible for the conduct of instruction and research in the various schools and colleges of the University.

In furtherance thereof this faculty:

(a) Enacts such regulations as it deems necessary to carry on instruction and research, promote faculty and student welfare, advance the standard of work and otherwise develop the scholarly aims of the University;

(b) Recommends to the University Trustees:

(1) Such persons as it deems fit to receive degrees or other marks of distinction; and

(2) The establishment of any new degree or diploma;

(c) Consults with and advises the President on matters of general University policy within its competence, in order to assist him in carrying out his duties as the chief administrative officer of the University and as the means of communication between the Trustees and the administrative officers and Faculty;

(d) Receives such information on the affairs of the University as is necessary for the exercise of its functions;

(e) Subject to the reserved power of control by the Trustees and the President, determines policies to which the faculties of all schools and colleges and all committees and councils thereof are expected to conform;

(f) In extraordinary circumstances, when normal channels of communication are not available, may by formal action request a conference between its representatives and representatives of the Board of Trustees or of the Executive Committee of the University. Under normal conditions the President of the University is the liaison between the University Faculty and the governing boards of the University or the committees thereof;

(g) Has as its Chairman the President of the University and as its Secretary the Secretary of the University;

(h) Meets regularly in October and February and before the June commencement; meets at other times on the call of the President or of the Vice-President in the Division of Education, or on the written request of twenty members. At the first meeting of each year the Faculty receives from the President a report on the state of the University;

(i) May exercise its functions through such committees as it may choose to set up. The University Council is a standing committee of the Faculty, subject to its regulations under these bylaws.

The University Council consists of fifteen members as follows: The President of the University; the Vice-President in the Division of Education; three persons, who need not be members of the University Faculty, appointed annually by the President; and ten members elected from and by the University Faculty. The Faculty members are selected from the schools and colleges as follows: from the School of Medicine and the School of Nursing, one member; from the Divinity School, the School of Forestry, and the School of Law, one member; from the College of Engineering, Trinity College and the Woman's College, and the Graduate School of Arts and Sciences, three members; and from the University Faculty at large, five members. The members are elected by such methods and for such terms as the University Faculty may by regulation prescribe.

The Council has three officers: A Chairman who normally presides; a Vice-Chairman who presides in the absence of, or at the request of, the Chairman;

and a Secretary. The President of the University is ex-officio Chairman of the Council. The Council elects annually by ballot the Vice-Chairman and Secretary from the Faculty members of the Council. The three officers constitute an agenda committee and appoint members of committees set up by the Council in cases where membership is not otherwise prescribed by Council action. Faculty members and officers of the University who are not Council members may serve on Council Committees. The Council meets at such times as it elects. Special meetings are called by the Chairman, by the Vice-Chairman, or, at the request of three of its members, by the Secretary. A majority of the members shall constitute a quorum.

The University Council serves as an advisory body on matters of general University policy and interest.

Through the University Council the President endeavors to keep the University Faculty informed upon major matters of University policy, and expects the Council to bring to his attention any matters affecting the general interests and policies of the University.

In the exercise of its advisory function the Council, at the request of the President, a faculty or department, or any individual of the faculties or administration, or on its own initiative, may:

(i) Consider any subject within its competence and report recommendations thereon to the President or to the University Faculty;

(ii) Study and report to the President or to the University Faculty on matters within its competence relating to any division of the University subject to the jurisdiction of the President or University Faculty, whenever the Council, by a three-fourths vote, decides that such study is in the best interests of the University.

The Council makes periodic reports in writing to the University Faculty on its activities.

The Undergraduate Faculty Council is composed of: The President of the University; the Vice-Presidents in the Divisions of Education and Student Life; the Secretary of the University; the Dean of Undergraduate Studies; the Deans, Associate Deans, and Assistant Deans of Trinity College, the Woman's College and the College of Engineering; the University Librarian; the Director of the Summer Session; the Directors of Admissions; the Director of the Bureau of Testing and Guidance; and the Chairman and Director of Undergraduate Studies of each department in the above colleges. Any department which has more than five full-time teaching staff members shall elect one additional member to the Council; any department which has more than ten such staff members shall elect a total of two additional members to the Council. The President in his discretion may appoint not more than five additional voting members.

The Vice-President in the Division of Education, or his deputy, serves as Chairman of the Council. The Council may provide for such standing or special committees, including an executive committee, as it deems necessary. Membership on committees of the Council is not restricted to Council members. The Council normally meets once each month during the academic year. Special meetings are called by the Chairman and on the written request of five members of the Council.

The functions of the Council, subject to the regulations of the University Faculty, are:

(a) To consider the broad objectives of undergraduate education;

(b) To encourage the achievement and maintenance of high standards of teaching and scholarship in the undergraduate colleges;

(c) To legislate on questions of curriculum for the undergraduate colleges of arts and sciences;

(d) To adopt regulations concerning matters affecting the academic life of students in the undergraduate colleges, and to integrate the details of educational and related interests of those colleges.

In the exercise of its functions, the Council receives information on such matters as student aid, admissions and student life.

The Graduate School Faculty is composed of the President of the University;

the Vice-President in the Division of Education; the Dean of the Graduate School; officers of the Graduate School; the Director of the Summer Session; the University Librarian; and all full-time faculty members of the rank of assistant professor and above who are approved to offer graduate work to to supervise the research work of graduate students registered in the Graduate School.

The Dean of the Graduate School, or his deputy, serves as Chairman of the Graduate School Faculty. A Secretary is appointed by the President.

There is an Executive Committee consisting of the Dean of the Graduate School and members elected by and from the Graduate School in accordance with regulations prescribed by the Graduate School Faculty. This Committee serves in an advisory and consultative capacity and discharges specific duties delegated to it by the Graduate School Faculty.

The Graduate School Faculty meets twice each semester. Additional meetings may be called by the Chairman or on the written request of five members. The Executive Committee normally meets once each month but not less than six times during each academic year.

The functions of the Graduate School Faculty, subject to the regulations of the University Faculty, are:

(a) To establish the standards of graduate work and the requirements for degrees in the Graduate School of Arts and Sciences;

(b) To study and enact the necessary regulations governing courses of graduate instruction and graduate research;

(c) To determine polices to be followed in dealing with other educational matters arising in the Graduate School of Arts and Sciences.

The Engineering Faculty Council consists of the President of the University; the Vice-President in the Division of Education; the Dean of the College of Engineering; the Dean of Undergraduate Studies; the Secretary of the Council; the Chairman and one additional representative from each department of Engineering; and three members from the University Faculty representing departments in which engineering students are required to take work. The Secretary and the three Faculty members from outside the College of Engineering are appointed annually by the President.

The Dean of the College of Engineering serves as Chairman of the Council. The Council normally meets once each month; additional meetings are called by the Chairman or on the written request of five Council members.

The Council considers and, subject to regulations of the University Faculty, legislates on questions of curricula and adopts regulations concerning those educational, professional, and administrative matters pertaining exclusively to the College of Engineering.

Each of the professional Schools of the University has its own faculty.

The President of the University, the Vice-President in the Division of Education, and all members of the University Faculty in each professional school are members of the faculty of that school.

The Dean of each professional school, or his deputy, serves as chairman of the Faculty of that school. Each faculty arranges details of its organization to fit its particular needs, observing the general principles of representation, freedom of discussion and democratic procedures.

The functions of each professional school faculty, subject to the regulations of the University Faculty, are to legislate on its curriculum and programs of work and to adopt regulations on the educational and administrative activities of that school.

6. ACADEMIC YEAR. The academic year begins on the morning of the Wednesday following September 15. The annual Commencement comes in the week including the first Sunday in June. The Christmas recess begins at 1:00 P.M. December 20 (or December 19 if December 20 falls on Sunday), and ends at 8:00 A.M., January 3 (or January 4 if January 3 falls on Sunday). The spring recess begins at 1:00 P.M. of the Saturday in March nearest to March 25, and ends at 8:00 A.M., of Monday nine days later. Thanksgiving Day is a holiday.

7. TENURE OF OFFICE. Teachers of all ranks are subject to removal by the Executive Committee, with the approval of the University Trustees, for misconduct or neglect of duty. Teachers may be elected for terms of one, two, three, or four years; or teachers with the rank of professor may be elected without time-limit. Administrative officers are usually elected without time-limit, but the Executive Committee, with the approval of the University Trustees, may remove any officer of the University, whenever, in their opinion, he is not properly performing the duties of his office.

8. The bylaws may be amended at any regular meeting of the University Trustees by the affirmative vote of two thirds of the then membership of the Board, providing that the proposed amendment is submitted through the Secretary of the Board to the members at least twenty days before the meeting.

SABBATICAL LEAVE

Sabbatical leave of absence for members of the University Faculty is granted under regulations adopted by the Executive Committee of the Trustees on March 28, 1923, revised in 1928, partly in abeyance in the year 1933-34 and the succeeding three years, and restored in the year 1937-38. The conditions on which sabbatical leave of absence is granted are set forth below.

1. Every member of the University Faculty (of the rank of professor, associate professor, and assistant professor) is eligible for sabbatical leave after six years in the service of the University. Such leave may be taken for a full year at half salary or a half year at full salary.

2. In order to obtain a sabbatical leave written request for such leave must be filed with the President of the University by December 1 of the academic year preceding the one in which the leave is to take effect.

3. If in exceptional cases it should develop that the granting of leave to an applicant during the year for which application is made would raise very serious difficulties detrimental ot the best interests of the applicant's department or school, or the interests of the institution as a whole; or because of questions concerning the applicant's period of service prior to the leave, the President shall appoint a committee which shall have power to decide the question of granting the sabbatical leave for the particular year under consideration. This committee shall consist of five members as follows: two members of the general faculty appointed yearly by the President, the Treasurer of the University, the Dean of the school or college of which the applicant is a member, the chairman of the applicant's department, or should no such chairman exist another member of the applicant's department.

4. If this committee should decide against the granting of a sabbatical leave for the year for which the applicant applied, the applicant would be eligible for sabbatical leave the following year or any year thereafter upon making application in due form as above.

5. After September 1, 1928, if a member of the faculty on becoming eligible for sabbatical leave does not for some special reason apply for such leave, he may count the additional years of service prior to his leave towards the six years of service necessary before he can apply for a subsequent leave. If in an exceptional case an applicant for personal reasons applies for a sabbatical leave to be effective in advance of his regular year and such leave is granted, he shall not be eligible for a subsequent leave until he has served six years plus the number of years by which this leave is advanced.

6. On recommendation of the committee after leave of absence has been granted it may be postponed for urgent reasons and under conditions to be determined by the committee.

7. All of those cases which have occurred in the past or which may occur in the future in which leave of absence is granted under conditions were the absentee receives full pay for a half year or half pay or more for a full year's leave of absence, shall be considered as regular sabbatical leave under these regulations.

8. These revised regulations became effective as of September 1, 1928, and sabbatical leaves under such regulations began with the academic year 1929-30.

The regulations were partly in abeyance in 1933-34, 1934-35, 1935-36, and 1936-37. The restoration of the regulations began with the academic year 1937-38. The four years, 1933-34, 1934-35, 1935-36, and 1936-37, may not count toward the six years of service necessary before application can be made for leave of absence. In all cases in which special arrangements have been made for the granting of sabbatical leave (as described in condition No. 7) during the period of partial abeyance of the plan, the next six years of service shall be counted as beginning with the academic year 1937-38. All other members of the General Faculty who apply for sabbatical leave may count the years of service they had to their credit at the beginning of the academic year 1933-34.

RETIREMENT

The following resolution was passed by the Board of Trustees on June 5, 1948:

RESOLVED, That the following regulations shall from the date of the adoption of this resolution govern the retirement of all officers and employees of Duke University:

I. *Retirement.*

Except as provided in Section II of this resolution all officers and employees of Duke University, except the Chancellor and Vice-Chancellor, shall retire at the end of the academic year in which they attain the age of sixty-nine (69), herein called the normal retirement age.

II. *Extension of Service.*

By special vote of the Board of Trustees individual extensions of service beyond the normal retirement age may be made for a definite period not to exceed one year, but no such extension shall postpone retirement beyond the end of the academic year in which the age of seventy (70) is attained.

III. *Amendment of Retirement Annuity Plan Adopted October 1, 1925.*

The retirement annuity plan adopted by Duke University on October 1, 1925, is hereby amended in those respects required to conform said plan with the provisions of this resolution.

IV. *Amendment.*

The University reserves the right at any time to amend these regulations by lowering the retirement age, or altering or abolishing the provision for extension of service, or otherwise.

Officers of the University for the Year 1959-60

The Corporation

The date in parentheses indicates the year of election.

THE EXECUTIVE COMMITTEE

*Norman Atwater Cocke (1953), *ex officio, Chairman*	Charlotte, N. C.
†Bunyan Snipes Womble (1950), *ex officio, Chairman*	Winston-Salem, N. C.
‡Arthur Hollis Edens (1948), *ex officio*	Durham, N. C.
§Julian Deryl Hart (1960) *ex officio*	Durham, N. C.
Benjamin Ferguson Few (1960)	Durham, N. C.
Amos Ragan Kearns (1948)	High Point, N. C.
Thomas Lee Perkins (1958)	New York, N. Y.
¶Alexander Hamilton Sands, Jr. (1946)	New York, N. Y.
Richard Elton Thigpen (1958)	Charlotte, N. C.
Kenneth Crawford Towe (1960)	Greenwich, Conn.
Christine Allen Kimball (1945), Recording Secretary	Durham, N. C.

THE UNIVERSITY TRUSTEES

Trustees whose term expires December 31, 1961

Calvin Bryan Houck (1951)	Roanoke, Va.
Edwin Lee Jones (1945)	Charlotte, N. C.
Ben Neely Miller, Jr. (1958)	Columbia, S. C.
Frank Odell Sherrill (1959)	Charlotte, N. C.
James Raymond Smith (1934)	Mt. Airy, N. C.
Thomas Fuller Southgate, Jr. (1959)	Winston-Salem, N. C.
Estelle Flowers Spears (1951)	Durham, N. C.
Richard Elton Thigpen (1953), *Vice Chairman*	Charlotte, N. C.

FROM THE ALUMNI

Benjamin Ferguson Few (1941)	New York, N. Y.
Julius Welch Harriss (1947)	High Point, N. C.
Robert Henry Pinnix (1959)	Gastonia, N. C.
**Hubbard Braxton Porter (1941)	Durham, N. C.

TRUSTEES WHOSE TERM EXPIRES DECEMBER 31, 1963

Robert Wallace Bradshaw (1959)	Durham, N. C.
Charles Albert Cannon (1949)	Concord, N. C.
Pleasant Huber Hanes, Jr. (1954)	Winston-Salem, N. C.
Thomas Lee Perkins (1958)	New York, N. Y.
¶Alexander Hamilton Sands, Jr. (1946)	New York, N. Y.
Wright Tisdale (1957)	Dearborn, Mich.
James Frederick Von Canon (1959)	Sanford, N. C.
Bunyan Snipes Womble (1915), *Chairman*	Winston-Salem, N. C.

FROM THE ALUMNI

Charles Phillips Bowles (1954)	Greensboro, N. C.
Norman Edward Edgerton (1941)	Raleigh, N. C.
Amos Ragan Kearns (1945)	High Point, N. C.
Robert Andrew Mayer (1897)	Charlotte, N. C.

* Resigned June 4, 1960.
† Elected June 4, 1960.
‡ Resigned, effective July 1, 1960.
§ President *pro tem*, effective July 1, 1960.
¶ Died April 22, 1960.
** Died April 7, 1960.

TRUSTEES WHOSE TERM EXPIRES DECEMBER 31, 1965

*Norman Atwater Cocke (1947), *Chairman*	Charlotte, N. C.
Donald Siler Elias (1929)	Asheville, N. C.
Joshua Lawrence Horne (1934)	Rocky Mount, N. C.
Jefferson Deems Johnson, Jr. (1955)	Raleigh, N. C.
Benjamin Everett Jordan (1943)	Saxapahaw, N. C.
†Reuben Buck Robertson, Jr. (1957)	Hamilton, Ohio
James Buren Sidbury (1947)	Wilmington, N. C.
Kenneth Crawford Towe (1954)	Greenwich, Conn.

FROM THE ALUMNI

Thomas A. Aldridge (1959)	New York, N. Y.
Kenneth Millikan Brim (1952)	Greensboro, N. C.
Edgar Harrison Nease (1950)	Concord, N. C.
George Robert Wallace (1954)	Morehead City, N. C.

TRUSTEES EMERITI

Sidney Sherrill Alderman (1934)	Washington, D. C.
George Garland Allen (1923)	New York, N. Y.
*Norman Atwater Cocke	Charlotte, N. C.
Pleasant Huber Hanes (1912)	Winston-Salem, N. C.
Jesse Paul Frizzelle (1937)	Snow Hill, N. C.
‡William Walter Peele (1921)	Laurinburg, N. C.
Earle Wayne Webb (1933)	New York, N. Y.

COMMITTEES OF THE UNIVERSITY TRUSTEES

Buildings and Grounds: Messrs. Smith, Jordan and Kearns
Business Administration: Messrs. Elias and Kearns
Colleges: Messrs. Mayer, Houck and Mrs. Spears
Divinity School: Messrs. Bowles, Edgerton and Nease
School of Forestry: Messrs. Edgerton, Few, Smith and Von Canon
Graduate School: Messrs. Cannon, Thigpen and Tisdale
Law School: Messrs. Womble, Johnson, Perkins and Thigpen
Library: Messrs. Harriss and Nease
Medical School and Hospital: Messrs. Elias, Horne, Sidbury and Towe
Physical Education and Athletics: Messrs. Smith, Edgerton, Harriss and Jordan
Engineering and Research: Messrs. Jones and Jordan
Cooperation and National Council: Messrs. Few, Kearns and Nease
Public Relations and Publicity: Messrs. Horne, Elias, P. H. Hanes, Jr., Harriss and Wallace

Emeriti

Alice Mary Baldwin, Ph.D., LL.D. *Professor Emeritus of History*	406 Swift Avenue
Paull Franklin Baum, Ph.D. *James B. Duke Professor Emeritus of English*	112 Pinecrest Road
Harold Crusius Bird, Ph.B., C.E. *Professor Emeritus of Civil Engineering*	1209 Virginia Avenue
Hugo Leander Blomquist, Ph.D. *Professor Emeritus of Botany*	922 Demerius Street
John Saeger Bradway, A.M., LL.B. *Professor Emeritus of Law*	1729 Fifth Avenue San Diego, Calif.
§Eber Malcolm Carroll, Ph.D. *James B. Duke Professor Emeritus of History*	
Benjamin Guy Childs, M.A. *Professor Emeritus of Education*	1019 West Markham Avenue

* Resigned June 4, 1960.
† Died, March 13, 1960.
‡ Died, July 1, 1959.
§ Died, December 28, 1959.

Frederick Augustus Grant Cowper, Ph.D. *Professor Emeritus of Romance Languages*	1017 Dacian Avenue
Mason Crum, Ph.D., Litt.D. *Professor Emeritus of Biblical Literature*	1538 Shenandoah Street Hollywood, Fla.
Howard Easley, Ph.D. *Associate Professor Emeritus of Education*	Guess Road
Frank Nicholas Egerton, A.M., E.E. *Associate Professor Emeritus of Electrical Engineering*	Brevard College Brevard, N. C.
William Stone Fitzgerald, A.M. *Instructor Emeritus of English*	Erwin Road
Allan H. Gilbert, Ph.D. *Professor Emeritus of English*	503 Compton Place
William Holland Hall, A.M., M.S.C.E. *J. A. Jones Professor Emeritus of Engineering*	3 Johnson Apartments 304 Watts Street
George T. Hargitt, Ph.D., Sc.D. *Professor Emeritus of Zoology*	811 Watts Street
Hornell Norris Hart, Ph.D. *Professor Emeritus of Sociology*	Centre College Danville, Ky.
Charles Cleveland Hatley, Ph.D. *Professor Emeritus of Physics*	Mt. Pleasant, N. C.
Franklin Simpson Hickman, Ph.D., D.D. *Professor Emeritus of the Psychology of Religion*	809 West Maumee Street Angola, Ind.
Jay Broadus Hubbell, Ph.D., Litt.D. *Professor Emeritus of English*	121 Pinecrest Road
William Henry Irving, B.A. (Oxon.), Ph.D. *Professor Emeritus of English*	2707 Legion Avenue
Howard Eikenberry Jensen, Ph.D. *Professor Emeritus of Sociology*	143 Pinecrest Road
Clarence Ferdinand Korstian, Ph.D. *Professor Emeritus of Silviculture*	4 Sylvan Road
Charles Albert Krummel, Ph.D. *Professor Emeritus of German*	2118 Englewood Avenue
William Thomas Laprade, Ph.D. *Professor Emeritus of History*	1108 Monmouth Avenue
Benjamin Franklin Lemert, Ph.D. *Professor Emeritus of Economics*	123 Pinecrest Road
Malcolm McDermott, LL.B. *Professor Emeritus of Law*	Box 451, Donna, Texas
Frank Kirby Mitchell, A.M. *Associate Professor Emeritus of English*	Naples, N. C.
Hiram Earl Myers, S.T.M., D.D. *Professor Emeritus of Biblical Literature*	141 Pinecrest Road
Karl Bachman Patterson, A.M. *Assistant Professor Emeritus of Mathematics*	1024 Monmouth Avenue
Robert Leet Patterson, Ph.D. *Professor Emeritus of Philosophy*	40 Glenwood Drive Bellehaven, Greenwich, Conn.
William Walter Rankin, M.A. *Professor Emeritus of Mathematics*	1011 Gloria Avenue
*Gilbert Theodore Rowe, S.T.D., D.D., Litt.D. *Professor Emeritus of Christian Doctrine*	
Lambert Armour Shears, Ph.D. *Professor Emeritus of German*	Box 25 New Milford, Conn.
Mrs. Bessie Whitted Spence, A.M., B.D. *Assistant Professor Emeritus of Biblical Literature*	3629 Hope Valley Road Hope Valley

* Died February 10, 1960.

Hersey Everett Spence, B.D., D.D., Litt.D. *Professor Emeritus of Religious Education*	3629 Hope Valley Road Hope Valley
Herbert Wilfrid Sugden, Ph.D. *Assistant Professor Emeritus of English*	Pinehurst, N. C.
Mrs. Mary Hendren Vance, A.M. *Assistant Professor Emeritus of English*	814 Cowper Drive Raleigh, N. C.
Clement Vollmer, Ph.D. *Professor Emeritus of German*	108½ Buchanan Boulevard
Herbert von Beckerath, Ph.D. *Professor Emeritus of Political Science and Economics*	Hotel Eden, Bad Godesberg a-Rhine, Germany
Warren Chase Vosburgh, Ph.D. *Professor Emeritus of Chemistry*	2319 Englewood Avenue
Arley John Walton, B.S.L., D.D. *Professor Emeritus of Church Administration*	3650 Mayflower Place Nashville 4, Tenn.
Albert Micajah Webb, A.M. *Professor Emeritus of Romance Languages*	1017 Trinity Avenue
Mrs. Marie Anne Updike White, A.M. *Associate Professor Emeritus of English*	107 Pinecrest Road
Alban Gregory Widgery, M.A. *Professor Emeritus of Philosophy*	Val Vista, Middle Road Winchester, Va.
Ralph Sydney Wilbur, B.S. in M.E., M.E. *Professor Emeritus of Mechanical Engineering*	1018 Demerius Street
Frederick Eliphaz Wilson, A.M. *Associate Professor Emeritus of German*	1020 Demerius Street
*Florence K. Wilson, R.N., M.A. *Professor Emeritus of Nursing Education*	
Robert North Wilson, M.S. *Professor Emeritus of Chemistry*	822 Onslow Street
Frederick Adolphus Wolf, Ph.D. *James B. Duke Professor Emeritus of Botany*	924 Urban Avenue

General Administration

†Arthur Hollis Edens, Ph.D., LL.D. *President of the University*	2138 Myrtle Drive
‡Julian Deryl Hart, M.D., *President pro tem*	
¶Paul Magnus Gross, Ph.D. *Vice-President in the Division of Education*	3816 Dover Road, Hope Valley
Charles Edward Jordan, A.B., LL.D. *Vice-President in the Division of Public Relations*	615 West Campus Drive
Herbert James Herring, M.A., LL.D. *Vice-President in the Division of Student Life*	2010 Myrtle Drive
Marcus Edwin Hobbs, Ph.D. *Dean of the University*	115 Pinecrest Road
Alfred Smith Brower, A.B. *Treasurer*	614 West Campus Drive
Gerhard Chester Henricksen, M.A., C.P.A. *Business Manager and Comptroller*	216 Forest Wood Drive
John Marion Dozier, A.B. *Secretary of the University*	2510 Wrightwood Avenue

* Died May 6, 1960.
† Resigned, effective July 1, 1960.
‡ Effective July 1, 1960.
¶ Resigned, March 23, 1960.

Instructional Staff

*Frances Dorothy Acomb (1945), Ph.D.
Associate Professor of History — H-2B University Apartments

Donald Keith Adams (1931), Ph.D.
Professor of Psychology — 1214 West Cornwallis Road

Julia Agner (1958), B.S.N.
Instructor in Pediatric Nursing — 9 Bel Air Apartments

Charles C. Ainsworth (1957), B.A., Captain, U. S. Navy
Professor of Naval Science — 2101 Myrtle Drive

†Paul Wesley Aitken (1958), B. D.
Visiting Lecturer of Pastoral Care

John Richard Alden (1955), Ph.D.
Professor of History — 2736 Dogwood Road

Richard H. Allen (1959), M.A.
Instructor in German — 914 Buchanan Boulevard

John Cooley Altrocchi (1957), Ph.D.
Assistant Professor of Psychology and Assistant Professor of Medical Psychology in Department of Psychiatry — 207 Ryan Street, Route 5

Edwin Pascal Alyea (1930), M.D.
Professor of Urology — 3102 Devon Road, Hope Valley

Carl L. Anderson (1955), Ph.D.
Assistant Professor of English — 2400 Chapel Hill Road

Hugh Anderson (1957), B.D., Ph.D.
Associate Professor of Biblical Theology — 917 Green Street

‡Lewis Edward Anderson (1936), Ph.D.
Professor of Botany — 2020 Sunset Avenue

Roger Fabian Anderson (1950), Ph.D.
Professor of Forest Entomology — 2528 Perkins Road

William Banks Anderson (1930), M.D.
Professor of Ophthalmology — 502 East Forest Hills Boulevard

ᶜH. G. Andrewartha (1959), M.Ag.Sc., D.Sc.
Visiting Lecturer in Zoology

William G. Anlyan (1951), M.D.
Associate Professor of Surgery — 1507 Woodburn Road

Jay Morris Arena (1933), M.D.
Professor of Pediatrics — 2032 Club Boulevard

§Kiro Pete Arges (1953), M.S. in C.E.
Assistant Professor of Civil Engineering — 2610 Roxboro Road

Ralph Aranovitz Arnold (1946), M.D.
Professor of Otology and Associate Professor of Otolaryngology and Ophthalmology — 911 Urban Avenue

John Leslie Artley (1955), D.Eng.
Associate Professor of Electrical Engineering — 2417 Wrightwood Avenue

Jesse Stephen Attebery, Jr. (1960), M.A.
Instructor in Education — Faculty Apartments

Theodore Winslow Atwood (1934), D.M.D.
Associate in Dentistry — 9 Carolee Apartments, 2200 Elder Street

Seymour Axelrod (1958), Ph.D.
Assistant Professor of Medical Psychology in Department of Psychiatry and Lecturer in Department of Psychology — 321 Monmouth Avenue

* Absent on sabbatical leave, fall semester, 1959-60.
† Resigned May 31, 1959.
‡ Absent on sabbatical leave, 1959-60.
ᶜ Resigned, January 31, 1960.
§ Absent on sabbatical leave, spring semester, 1959-60.

Thomas Malcolm Aycock (1937), M.A.
Professor of Physical Education — D1C University Apartments

Hans W. Baade, (1960), LL.B., LL.M.
Visiting Associate Professor of Law — 2117 Myrtle Drive

Kurt W. Back (1959), Ph.D.
Associate Professor of Medical Sociology in Department of Psychiatry and Associate Professor of Sociology in Department of Sociology — 1212 Roosevelt Drive, Chapel Hill, N. C.

Joseph Randle Bailey (1946), Ph.D.
Associate Professor of Zoology — 2117 Sprunt Street

Lenox Dial Baker (1937), M.D.
Professor of Orthopaedic Surgery — 3016 Cornwall Road, Hope Valley

Roger D. Baker (1930-42; 1952), M.D.
Professor of Pathology — 303 Swift Avenue

Marie Baldwin (1949), M.D.
Associate in Psychiatry — Highland Hospital, Asheville, N. C.

Katharine May Banham (1946), Ph.D.
Associate Professor of Psychology — College Station

Norman Howard Barlow (1955), B.A., (Honors)
Instructor in Romance Languages — 3852 Summerset Drive

William Barry (1955), M.D.
Associate Professor of Radiology and Chief of Radiology of Durham Veterans Administration Hospital — 1022 Gloria Avenue

*Robert V. R. Bassett, Jr. (1956), B.S., Captain, U. S. Navy
Professor of Naval Science

George Jay Baylin (1939), M.D.
Professor of Radiology and Associate in Anatomy — 2535 Wrightwood Avenue

Charles A. Baylis (1952), Ph.D.
Professor of Philosophy — 601 East Markham Avenue

Reaves H. Baysinger (1959), B.S., Lieutenant Commander, U. S. Navy
Assistant Professor of Naval Science — 611 West Markham Avenue

William Waldo Beach (1946), B.D., Ph.D.
Professor of Christian Ethics — 130 Pinecrest Road

Mrs. Dorothy Waters Beard (1938), R.N.
Associate in Surgery — Route 3, Hillsboro, N. C.

Joseph Willis Beard (1937), M.D.
Professor of Surgery in Charge of Experimental Surgery; Associate Professor of Virology — Route 3, Hillsboro, N. C.

Robert L. Beare (1959), Ph.D.
Assistant Professor of German — Apartment H, 1301 Leon Street

George S. Beaudreau (1959), Ph.D.
Assistant Professor of Virology — 1828 Forest Road

Roland Frederick Becker (1951), Ph.D.
Associate Professor of Anatomy — 920 Monmouth Avenue

Winfred E. A. Bernhard (1958), M.A.
Instructor in History — G-3B University Apartments

Frederick Bernheim (1930), Ph.D.
Professor of Pharmacology — 115 Woodridge Drive

Mrs. Mary Lilias Christian Bernheim (1930), Ph.D.
Associate Professor of Biochemistry — 115 Woodridge Drive

†Percy Levy Bernstein (1959), M.A.T.
Temporary Instructor in Mathematics

Edward Willard Berry (1936), Ph.D.
Professor of Geology — 1003 North Gregson Street

* Resigned August 31, 1959.
† Resigned May 31, 1960.

Mrs. Helen Smith Bevington (1943), M.A.
Associate Professor of English — Box 128, Route 2, Guess Road

Merle Mowbray Bevington (1942), Ph.D.
Professor of English — Box 128, Route 2, Guess Road

Lucius Aurelius Bigelow (1929), Ph.D.
Professor of Chemistry — 131 Pinecrest Road

William Dwight Billings (1952), Ph.D.
Professor of Botany — 708 Louise Circle

Edward G. Bilpuch (1959), Ph.D.
Visiting Assistant Professor of Physics — Box 674, Chapel Hill, N. C.

Robert W. Binkley (1957), Ph.D.
Instructor in Philosophy — Apartment 2, Sedgefield and Markham Avenue

Martin Lee Black, Jr. (1930), M.B.A., C.P.A.
Professor of Accounting — 135 Pinecrest Road

John O. Blackburn (1959), Ph.D.
Visiting Assistant Professor of Economics — 705 Hudson Avenue

William Maxwell Blackburn (1926), Ph.D.
Professor of English — 402 Buchanan Boulevard

Robert Lincoln Blake (1949)
Associate in Medical Art and Illustration — 609 Ruby Street

Martin M. Block (1952), Ph.D.
Associate Professor of Physics and Research Associate — 2255 Cranford Road

Chauncey D. Bly (1959), M.D., Ph.D.
Associate Professor of Pathology — 1103 Anderson Street

James Robert Bly (1949), M.S.
Assistant Professor of Physical Education — 2001 Ruffin Street

Morton Bogdonoff (1957), M.D.
Associate Professor of Medicine — 2425 Wrightwood Avenue

William Bryan Bolich (1927), M.A., B.C.L.
Professor of Law — 3724 Hope Valley Road

Edward Claude Bolmeier (1948), Ph.D.
Professor of Education — 217 Faculty Apartments

Robert A. Bonar (1959), Ph.D.
Assistant Professor of Biophysics in Department of Surgery — 3306 Chapel Hill Road

Allan Hadley Bone (1944), M.M.
Professor of Music — 2314 West Club Boulevard

C. Alan Boneau (1957), Ph.D.
Assistant Professor of Psychology — 911 Murray Avenue

James Bonk (1959), Ph.D.
Instructor in Chemistry — 2415 Club Boulevard

Cazlyn Green Bookhout (1935), Ph.D.
Professor of Zoology — 1307 Alabama Avenue

Mrs. Elizabeth Circle Bookhout (1932-43; 1945), M.S.
Professor of Physical Education — 1307 Alabama Avenue

*Lloyd J. Borstelmann (1953), Ph.D.
Assistant Professor of Medical Psychology in Department of Psychiatry and Assistant Professor in Department of Psychology — 305 Francis Street, Rockwood

†Michel Bourgeois-Gavardin (1953), M.D.
Associate Professor of Anesthesiology

Francis Ezra Bowman (1945), Ph.D.
Associate Professor of English — 2114 Woodrow Street

Benjamin Boyce (1950), Ph.D.
Professor of English — 1200 Dwire Place

*Absent on leave, 1959-60.
† Resigned, August 31, 1959.

Thomas Allen Boyle (1957), M.S. in M.E.
Associate Professor of Mechanical Engineering — 1308 Anderson Street

*John I. Bradbury (1957), B.S., Lieutenant, U. S. Navy
Instructor in Naval Science

David Gilbert Bradley (1949), Ph.D.
Associate Professor of Religion — 707 Hudson Street

†Harold L. Bradley (1950), B.S.
Associate Professor of Physical Education

‡Charles Kilgo Bradsher (1939), Ph.D.
Professor of Chemistry — 118 Pinecrest Road

*Louis Richard Bragg (1955), Ph.D.
Assistant Professor of Mathematics

Ralph J. D. Braibanti (1953), Ph.D.
Professor of Political Science — 2614 Stuart Drive

Jack W. Brehm (1958), Ph.D.
Assistant Professor of Psychology — 3214 Duke Homestead Road

Bernard Bressler (1954), M.D.
Associate Professor of Psychiatry — 2700 Circle Drive

Roberta Florence Brinkley (1947), Ph.D., LL.D.
Professor of English — East Campus

Mrs. Edith Brocker (1955), R.N., M.A.
Associate Professor of Nursing and Assistant Dean of the School of Nursing — 1326 Welcome Circle

Jens Brodersen (1959), Dipl. Dolm.
Temporary Instructor in German — 2541 Chapel Hill Road

‡Robert Maurice Broderson (1952), M.F.A.
Assistant Professor of Aesthetics, Art, and Music and Assistant Professor of Education — 2015 Walnut Street

Edwin L. Brown (1958), M.A.
Instructor in Greek — 206 East Woodridge Drive

Frances Campbell Brown (1931), Ph.D.
Professor of Chemistry — 1205 Dwire Place

George H. Brown (1958), E.E., M.D.
Associate Professor of Radiology — 1608 Greenleaf Street

Ivan Willard Brown, Jr. (1940-42; 1945), M.D.
Professor of Surgery — 1709 Vista Street

*Joan Brown (1958), B.S.N.
Instructor in Nursing

Robert Guy Brown (1957), M.A.
Instructor in Medical-Sociology and Instructor in Sociology — 2915 Fairview Road

*William Hugh Brownlee (1948), Th.M., Ph.D.
Associate Professor of Old Testament

Edward Byerly Brucker (1960), Ph.D.
Part-time Visiting Assistant Professor in Physics and Research Associate — 1405 Watts Street

§Paul Robey Bryan, Jr. (1951), Ph.D.
Associate Professor of Music — 2118 West Club Boulevard

Joseph Allen Bryant, Jr. (1959), Ph.D.
Associate Professor of English — 911 Green Street

Edwin Constant Bryson (1931), LL.B.
Professor of Law — 818 Anderson Street

* Resigned August 31, 1959.
† Resigned May 4, 1959.
‡ Absent on sabbatical leave, 1959-60.
§ Absent on sabbatical leave, spring semester, 1959-60.

Victor Albert Bubas (1959), B.S.
Instructor in Physical Education and Head Varsity Basketball Coach — 1021 Anderson Street

*Michael J. Buckingham (1956), Ph.D.
Visiting Assistant Professor of Physics

Louis J. Budd (1952), Ph.D.
Assistant Professor of English — 1011½ Dacian Avenue

Albert George Buehler (1955), B.A.
Instructor in Physical Education — K-3A University Apartments

Mrs. Je Harned Bufkin (1949), R.N., R.R.L.
Associate Professor of Medical Record Library Science — 912 Anderson Street

Everett I. Bugg, Jr. (1953), M.D.
Associate in Orthopaedics — 1544 Hermitage Court

†Mrs. Grace Nielsen Bullock
Instructor in Nursing

‡Richard E. Burwell (1960), M.A.
Temporary Instructor in English

William S. Bush, Jr. (1959), Docteur de l' Université de Paris
Instructor in Romance Languages — 1711 Lakewood Avenue

Ewald W. Busse (1953), M.D.
Professor of Psychiatry — 1423 Woodburn Road

Gale Herbert Buzzard (1956), B.S. in M.E.
Instructor in Mechanical Engineering — Route 1, Hillsboro, N. C.

William Lawrence Byrne (1954), Ph.D.
Assistant Professor of Biochemistry — 2921 Hope Valley Road

Elinor Caddell (1959), M.S.N.
Instructor in Nursing — 707 Louise Circle

§Nathan R. Callaghan, Jr. (1957), D.D.S.
Associate in Dentistry

Jaspar Lamar Callaway (1937), M.D.
Professor of Dermatology and Syphilology — 828 Anderson Street

Donald Amos Calleson (1955), B.S. in M.E.
Instructor in Mechanical Engineering — 928 Lambeth Circle

Edmund McCullough Cameron (1926), A.B.
Director of Physical Education and Athletics — 2818 Chelsea Circle, Hope Valley

¶Emily Brently Campbell (1955), R.N., B.S.N.E.
Instructor in Nursing Arts — Ryan Street

‡William L. Canine, Jr. (1958), M.A.
Instructor in English

**James Cannon (1919), A.M., Th.M.
Ivey Professor of the History of Religion and Missions

Leonard Carlitz (1932), Ph.D.
Professor of Mathematics — 2303 Cranford Road

John William Carlton (1955), B.D., Ph.D.
Assistant Professor of Preaching — 208 Faculty Apartments

David Williams Carpenter (1929), Ph.D.
Professor of Physics — 137 Pinecrest Road

John Winder Carr, Jr. (1926), Ph.D.
Professor of Education — 926 Monmouth Avenue

††Warren Carr (1958), A.B., B.D., Th.M.
Visiting Lecturer of Pastoral Care

* Resigned June 30, 1959.
† Resigned August 31, 1959.
‡ Resigned May 31, 1960.
§ Resigned January 24, 1960.
¶ Absent on leave, 1959-60.
** Died, March 10, 1960.
†† Resigned May 31, 1959.

Gale H. Carrithers, Jr. (1958), M.A.
Instructor in English — 907 Shepherd Street

R. Charman Carroll (1944), R.N., A.B., M.D.
Associate Professor of Psychiatry — Highland Hospital, Asheville, N. C.

Bayard Carter (1931), M.D.
Professor of Obstetrics and Gynecology — 2111 Myrtle Drive

Allan Murray Cartter (1952), Ph.D.
Professor of Economics — 1208 Dwire Place

William H. Cartwright (1951), Ph.D.
Professor of Education — 2114 Myrtle Drive

Mrs. Helen Kennard Castellano (1947), M.A.
Assistant Professor of Romance Languages — 2511 Perkins Road

Juan Rodriguez Castellano (1947), Doctor en Filosofía y Letras
Professor of Romance Languages — 2511 Perkins Road

Matthew O. Caulfield (1959), B.A.
Instructor in Latin — 1008 Monmouth Avenue

Patrick J. Cavanaugh (1960), M.D.
Associate Professor of Radiology in charge of Radiation Therapy Division — 806 Morehead Avenue

Leon Edward Chaiken (1952), B.S., M.F.
Professor of Forest Management and Assistant Director of the Forest — 2737 Dogwood Road

*Mrs. Roma Sawyer Cheek (1947), Ph.D.
Assistant Professor of Political Science — 210 Cottage Lane, Chapel Hill, N. C.

Clifton Cherpack (1958), Ph.D.
Associate Professor of Romance Languages — 1010 Minerva Avenue

Walter B. Cherny (1957), C.M., L.M.C.C., M.D.
Assistant Professor of Obstetrics and Gynecology — 1510 Carolina Avenue

Ernest W. Chick (1958), M.D.
Associate in Pathology and Clinical Investigation at Veterans Hospital — 611 Watts Street

†John S. Chipman (1960), Ph.D.
Visiting Associate Professor of Economics

Elon Henry Clark (1934)
Professor of Medical Art and Illustration — Erwin Road

Kenneth Willis Clark (1931), B.D., Ph.D.
Professor of New Testament — 1308 West Markham Avenue

Lelia Ross Clark (1949), R.N., M.A.
Professor of Nursing Service — 880 Louise Circle

*Romane Lewis Clark (1953), Ph.D.
Associate Professor of Philosophy — Apartment 10, Sedgefield and Markham Avenue

‡James W. Clarke (1958), Ph.D.
Visiting Associate Professor of Geology

§James T. Cleland (1945), M.A., Th.D.
James B. Duke Professor of Preaching — 2117 Mrytle Drive

Frank W. Clippinger (1957), M.D.
Assistant Professor of Surgery — 1302 Oakland Avenue

George Alan Clugston (1958), M.A.
Instructor in English — L-1B University Apartments

Paul Hibbert Clyde (1937), Ph.D.
Professor of History — 1406 Woodburn Road

* Absent on sabbatical leave, fall semester, 1959-60.
† Resigned May 31, 1960.
‡ Resigned May 31, 1959.
§ Absent on sabbatical leave, 1959-60.

*Paul Whitlock Cobb (1955), B.S.
Instructor in Physical Education

*Mrs. Mary Browder Cochran (1957), B.S. in P.E.
Instructor in Physical Education

Louis David Cohen (1946), Ph.D.
Professor of Psychology and Professor of Medical Psychology — 1505 Acadia Street

Sanford I. Cohen (1957), M.D.
Assistant Professor of Psychiatry — 1527 Woodburn Road

†Robert Taylor Cole (1935), Ph.D.
James B. Duke Professor of Political Science — 7 Sylvan Road

Joel G. Colton (1947), Ph.D.
Associate Professor of History — 2801 Dogwood Road

‡Robert Merle Colver (1953), Ed.D.
Associate Professor of Education — 2720 Circle Drive

William Wesley Combs, Jr. (1958), A.M.
Instructor in English — 2717 Augusta Drive

Norman Francis Conant (1935), Ph.D.
Professor of Microbiology and Consultant to Department of Medicine for Mycology — Route 3, Box 62 Old Cornwallis Road

§Robert Howe Connery (1949), Ph.D.
Professor of Political Science — 1722 Duke University Road

¶Evelyn Vail Coonrad (1952-52: 1955), M.D.
Associate in Medicine — 2203 Sprunt Street

Raphael W. Coonrad (1960), M.D.
Associate in Orthopaedics — 2203 Sprunt Street

‡Thomas Howard Cordle (1950), Ph.D.
Associate Professor of Romance Languages — 2420 Perkins Road

**John D. Costlow (1959), Ph.D. — Duke University Marine Laboratory
Assistant Professor of Zoology — Beaufort, N. C.

Robert Calvin Cox (1942), M.A.
Assistant Professor of Physical Education — 1913 University Road

Robert Lawrence Craig (1938), M.D. — Highland Hospital
Associate in Psychiatry — Asheville, N. C.

Joyce Crane (1960), R.N., M.S.N.
Instructor in Nursing — Hanes House

Theodore R. Crane (1958), Ph.D.
Instructor in History — 809 Watts Street

Robert Nowell Creadick (1946), M.D.
Associate Professor of Obstetrics and Gynecology — 1200 Anderson Street

William L. Culberson (1955), Ph.D.
Assistant Professor of Botany — King Road, Route 1

*Fay M. Culpepper (1958), B.S.
Instructor in Economics

John Shelton Curtiss (1945), Ph.D. — Route 2, Box 129
Professor of History — Guess Road

Robert Earl Cushman (1945), B.D., Ph.D.
Professor of Systematic Theology — 2022 Mrytle Drive

W. Kenneth Cuyler (1959), Ph.D.
Associate Professor of Cytology and Anatomy — Route 1, Box 52

* Resigned August 31, 1959.
† Absent on sabbatical leave, 1959-60.
‡ Absent on sabbatical leave, fall semester, 1959-60.
§ Absent on leave of absence, 1959-60.
¶ Absent on leave, effective September 30, 1959.
** Absent on leave, December 1, 1959-November 30, 1960.

Bingham Dai (1943), Ph.D. *Professor of Psychology and Professor of Medical Psychology*	2404 Perkins Road
Mrs. Jo Ann Baughan Dalton (1958), B.S.N. *Instructor in Medical-Surgical Nursing*	Poplar Apartments Brown Avenue
*Boyd Lee Daniels (1952), B.D., Ph.D. *Assistant Professor of Religion*	220 Dacian Avenue
Paul G. Daston (1958), Ph.D. *Assistant Professor of Psychology and Assistant Professor of Medical Psychology*	3415 Hope Valley Road
†Ollie Belle Davenport (1958), B.S.N. *Instructor in Nursing*	
Eugene A. Davidson (1957), Ph.D. *Assistant Professor of Biochemistry*	1002 Camden Avenue
‡J. Kenneth Davies (1959), Ph.D. *Visiting Assistant Professor of Economics*	
§Gifford Davis (1930), Ph.D. *Professor of Romance Languages*	2248 Cranford Road
Mrs. Atala Thayer Scudder Davison (1942), M.D. *Associate in Pediatrics*	Norwich Way, Hope Valley
Wilburt Cornell Davison (1927), M.D., D.Sc., LL.D. *James B. Duke Professor of Pediatrics*	Norwich Way, Hope Valley
§Hans E. Debrunner (1959), Ph.D. *Research Instructor in Mathematics*	1021 West Trinity Avenue
John Essary Dees (1939), M.D. *Professor of Urology*	413 Carolina Circle
Mrs. Susan Coons Dees (1939), M.D. *Professor of Pediatrics*	413 Carolina Circle
William J. DeMaria (1951), M.D. *Associate Professor of Pediatrics*	1501 Woodburn Road
Sara Jamison Dent (1955), M.D. *Associate Professor of Anesthesiology*	Hillsboro, N. C.
William Ernest DeTurk (1949), M.D., Ph.D. *Associate Professor of Pharmacology*	2513 Pickett Road
Frank Traver de Vyver (1935), Ph.D. *Professor of Economics*	8 Sylvan Road
Donald J. Dewey (1950), M.A. *Associate Professor of Economics*	1026 West Trinity Avenue
†David Powley DeWitt (1957), M.S. in M.E. *Instructor in Mechanical Engineering*	
Irving Diamond (1958), Ph.D. *Associate Professor of Psychology*	1506 Fir Street
Macdonald Dick (1932), M.D. *Assistant Professor of Physiology and Pharmacology and Associate in Medicine*	3005 Norwich Way, Hope Valley
Robert L. Dickens (1949), M.S., C.P.A. *Associate Professor of Accounting*	2717 Circle Drive
Marcus L. Dillon (1956), M.D. *Associate Professor of Surgery*	203 Francis Street
George Edward Dorris (1957), M.A. *Instructor in English*	617 Park Place Lane Chapel Hill, N. C.

* Absent on sabbatical leave, fall semester, 1959-60.
† Resigned August 31, 1959.
‡ Resigned May 31, 1960.
§ Absent on sabbatical leave, spring semester, 1959-60.

Robert H. Dovenmuehle (1956), M.D.
Assistant Professor of Psychiatry — 3527 Hamstead Court

Mrs. Marie-Therese Liniere Dow (1934), L.ès L., M.A.
Assistant Professor of Romance Languages — 2252 Cranford Road

Neal Dow (1934), Ph.D.
Professor of Romance Languages — 2252 Cranford Road

Owen W. Doyle (1957), M.D. — 1013 Professional Village
Associate Professor of Radiology — Greensboro, N. C.

Francis George Dressel (1929), Ph.D.
Professor of Mathematics — 309 Francis Street

Kenneth Lindsay Duke (1940), Ph.D.
Associate Professor of Anatomy — 701 West Club Boulevard

Charles H. Duncan (1959), B.A., Lieutenant Colonel, U. S. Air Force
Professor of Air Science — 3621 Britt Street

Marion Mahan Duncan (1956), Ph.D.
Visiting Assistant Professor of Physics — 3407 East Oak Drive

Arthur Stephen Dunning (1959), Ph.D.
Assistant Professor of Education — 1022 Urban Avenue

*Robert F. Durden (1952), Ph.D.
Assistant Professor of History — 2532 Wrightwood Avenue

George Sharp Eadie (1930), Ph.D.
Professor of Physiology and Pharmacology — 3433 Dover Road, Hope Valley

Watt Weems Eagle (1930), M.D.
Professor of Otolaryngology — 804 Anderson Street

†Paul H. Earls (1959), Ph.D.
Visiting Lecturer in Music

Mrs. Eleanor Beamer Easley (1934), M.D.
Associate in Obstetrics and Gynecology — 604 West Chapel Hill Street

Ruth Buchanan Eddy (1952), M.S.
Assistant Professor of Physical Education — Box 6836, College Station

Ray L. Edwards (1959), Ph.D.
Visiting Lecturer in Physics — 2714 Dogwood Road

Carl Eisdorfer (1958), Ph.D.
Assistant Professor of Medical Psychology in Department of Psychiatry and Lecturer in Department of Psychology — 2537 Chapel Hill Road

William Whitfield Elliott (1925), Ph.D.
Professor of Mathematics — 4721 Duke Station

Ernest Elsevier (1950), M.S. in M.E.
Associate Professor of Mechanical Engineering — 2413 Wrightwood Avenue

Frank Libman Engel (1947), M.D. — 1302 Oakland Avenue
Professor of Medicine and Associate Professor of Physiology

‡Paul J. English (1956), A.B., Captain, U. S. Air Force
Assistant Professor of Air Science

E. Harvey Estes (1953), M.D.
Associate Professor of Medicine — 3542 Hamstead Court

John Wendell Everett (1932), Ph.D.
Professor of Anatomy — 2605 University Drive

Robinson Oscar Everett (1956), LL.B.
Visiting Associate Professor of Law — 119 North Dillard Street

Don D. Ezell (1957), M.Ed., Major, U. S. Marine Corps
Assistant Professor of Naval Science — 613 West Markham Avenue

‡William Martin Fairbank (1952), Ph.D.
Professor of Physics

* Absent on sabbatical leave, fall semester, 1959-60.
† Resigned May 31, 1960.
‡ Resigned August 31, 1959.

Carmen M. Falcone (1946), M.A.
Associate Professor of Physical Education — D-1A University Apartments

Amerigo Farina (1958), Ph.D.
Assistant Professor of Psychology — 942D Lambeth Circle

Judith Farrar (1952), A.B., B.S.
Professor of Medical Literature — 117 Faculty Apartments

Donn Michael Farris (1959), B.D., M.S. in L.S.
Assistant Professor of Theological Bibliography and Librarian — 921 Buchanan Boulevard

John Morton Fein (1950), Ph.D.
Associate Professor of Romance Languages — 2742 Circle Drive

Charles Fenton (1958), Ph.D.
Professor of English — 2535 Perkins Road

*Arthur Bowles Ferguson (1939), Ph.D.
Associate Professor of History — Route 2, Guess Road

Charles E. Ferguson (1957), Ph.D.
Assistant Professor of Economics — 2108 Sprunt Street

George Burton Ferguson (1937), M.D.
Assistant Professor of Endoscopy and Laryngology — 3938 Dover Road, Hope Valley

Oliver W. Ferguson (1957), Ph.D.
Assistant Professor of English — 910 West Markham Avenue

Bernard F. Fetter (1951), M.D.
Associate Professor of Pathology — 3826 Summerset Drive

John H. Fisher (1955), Ph.D.
Professor of English — 2836 Stuart Drive

Weston Flint (1956), Ph.D.
Assistant Professor of Romance Languages — 1412 Pennsylvania Avenue

†Peter Flor (1958), Ph.D.
Research Instructor in Mathematics

Marcel Florkin (1960), M.D.
Visiting Professor of Zoology — 2148 Cranford Road

Walter L. Floyd (1959), M.D.
Associate in Medicine — 2011 Woodrow Street

Donald J. Fluke (1957), Ph.D.
Associate Professor of Zoology — 2413 Wrightwood Avenue

James M. Folson (1959), B.A.
Instructor in Economics — 921 Exum Street

Wiley Davis Forbus (1930), M.D.
Professor of Pathology — 3309 Devon Road, Hope Valley

Rose Juliet Forgione (1956), R.N., M.A.
Assistant Professor of Pediatric Nursing — H-12, Westover Park Apartments

†Andrew Durwood Foster (1954), B.D., Th.D.
Associate Professor of the History and Philosophy of Religion

John Alvis Fowler (1953), M.D.
Associate Professor of Psychiatry and Pediatrics — 1504 Woodburn Road

‡Leonard Frederick Freiburghouse (1959), B.S., M.A.T.
Temporary Instructor in Mathematics

Charles F. Frenzel (1955), B.A.
Associate Professor of Hospital Administration and Superintendent of Duke Hospital — 3950 Bristol Road

Wanda Hale Friday (1959), B.A.
Computing Laboratory Instructor and Programmer in Mathematics — Box 389A, Route 1, Hillsboro Road

* Absent on sabbatical leave, spring semester, 1959-60.
† Resigned August 31, 1959.
‡ Resigned May 31, 1960.

Irwin Fridovich (1958), Ph.D.
Associate in Biochemistry — 305 West Markham Avenue

John B. Funderburg, Jr. (1959), Ph.D.
Temporary Instructor in Zoology — 1704 Maryland Avenue

William J. Furbish (1954), B.S., M.A.
Assistant Professor of Geology — Route 1, Hillsboro, N. C.

Mercedes Gaffrom (1958), M.D., Ph.D.
Assistant Research Professor of Psychology — 2110 Wilson Street

Thomas Muir Gallie, Jr. (1954-55; 1956), Ph.D.
Assistant Professor of Mathematics — 1012 West Trinity Avenue

Clarence Ellsworth Gardner, Jr. (1930), M.D., D.Sc.
Professor of Surgery — Route 1, Hillsboro, N. C.

William Henry Gardner, Jr. (1953), B.S. in C.E., M. Eng.
Associate Professor of Civil Engineering — 1519 Woodburn Road

Norman Garmezy (1950), Ph.D.
Associate Professor of Psychology and Consultant in Medical Psychology in Department of Psychiatry — 3423 Hope Valley Road

Mrs. Ila Gehman (1959), Ed.D.
Consultant in Psychiatry and Lecturer in Psychology — 1312 Shepherd Street

W. Scott Gehman, Jr. (1954), Ph.D.
Associate Professor of Psychology in Education — 1312 Shepherd Street

Nicholas G. Georgiade (1951), D.D.S., M.D.
Associate Professor of Plastic Surgery — 2523 Wrightwood Avenue

Rhett Truesdale George, Jr. (1957), M.S.E.
Assistant Professor of Electrical Engineering — 919 Broad Street

John Jay Gergen (1936), Ph.D.
Professor of Mathematics — 2803 Nation Avenue

Hans W. Gerhard (1959), "Abitur," "Diplom rer. pol.," Ph.D.
Visiting Assistant Professor of Economics — 1410 Alabama Avenue

*John S. Gillespie (1958), Ph.D.
Visiting Assistant Professor of Political Science

Donald Gillin (1959), Ph.D.
Instructor in History — 1806½ Shelton Street

†Sherwood Githens (1958), Ph.D.
Lecturer in Physics

John Glasson (1960), M.D.
Associate in Orthopaedics — 615 Swift Avenue

Mrs. Elaine Gleason (1958-June 1959; September 1959), B.S.N.
Instructor in Nursing — 804 Louise Circle

George C. Glockler (1952), Ph.D.
Visiting Lecturer in Chemistry — 3910 Darby Road, Hope Valley

‡James S. Glotfelty (1955), M.D.
Associate Professor of Psychiatry and Assistant Professor of Hospital Administration

Clarence Gohdes (1930), Ph.D.
Professor of English — 2737 Circle Drive

Joseph Leonard Goldner (1950), M.D.
Professor of Orthopaedic Surgery — 602 East Forest Hills Boulevard

Richard A. Goodling (1959), B.D., Ph.D.
Associate Professor of Pastoral Care — 1704 Sprunt Street

Craufurd David Goodwin (1959), Ph.D.
Part-time Assistant Professor of Economics — 7 Sylvan Road

* Resigned January 31, 1959.
† Resigned May 31, 1960.
‡ Resigned September 15, 1959.

Walter Gordy (1946), Ph.D., LL.D., D.H.C.
James B. Duke Professor of Physics — 2521 Perkins Road

John A. Goree (1959), M.D.
Associate in Radiology — 3817 Hillgrand Circle

Mrs. Dorothy Grant (1958), M.S.
Assistant Professor of Nursing — 106 Buchanan Boulevard

*Richard Babson Grant (1952), Ph.D.
Assistant Professor of Romance Languages — 2509 Wrightwood Avenue

Irving Emery Gray (1930), Ph.D.
Professor of Zoology — 124 Pinecrest Road

Ronald C. Greene (1958), Ph.D.
Associate in Biochemistry — 2220 Elba Street

John R. Gregg (1957), Ph.D.
Professor of Zoology — Pickett and Randolph Roads

Eugene Greuling (1948), Ph.D.
Associate Professor of Physics — 2414 Perkins Road

Egil Grislis (1959), B.D., Ph.D.
Assistant Professor of Historical Theology — 1107 Urban Avenue

Keith Sanford Grimson (1930-42; 1945), M.D.
Professor of Surgery — 3313 Devon Road, Hope Valley

Paul Magnus Gross (1919), Ph.D.
William Howell Pegram Professor of Chemistry — 3816 Dover Road, Hope Valley

Samson R. Gross (1960), Ph.D.
Associate Professor of Microbiology — 206 Swift Avenue

Julia Rebecca Grout (1924), M.S.
Professor of Physical Education — 804 Berkeley Street

Norman Guttman (1951), Ph.D.
Associate Professor of Psychology — 201 West Woodridge Drive

Ellis P. Hagler (1930)
Instructor in Physical Education — Route 1, Cornwallis Road

Herbert R. Hahn (1958), M.B.A.
Visiting Assistant Professor of Economics — Route 1, Cambridge Road

Howard N. Haines (1943), B.S.
Assistant Professor of Civil Engineering — 2732 Dogwood Road

Frank Gregory Hall (1926-42; 1945), Ph.D.
Professor of Physiology and Pharmacology — 122 Pinecrest Road

†Hugh Marshall Hall (1952), Ph.D.
Assistant Professor of Political Science — 2413 Wrightwood Avenue

Kenneth D. Hall (1958), M.D.
Assistant Professor of Anesthesiology — 3804 Hillgrand Circle

Louise Hall (1931), S.B. Arch., Ph.D.
Associate Professor of Architecture — 6636 College Station

*John Hamilton Hallowell (1942), Ph.D.
Professor of Political Science — 2709 Augusta Drive

Charles F. Halsted (1958), B.A., Major, U. S. Air Force
Associate Professor of Air Science — Manchester Apartments

Edwin Crowell Hamblen (1931), M.D.
Professor of Endocrinology and Associate Professor of Obstetrics and Gynecology — 810 Forest Hills Boulevard

William Baskerville Hamilton (1936), Ph.D.
Professor of History — 2256 Cranford Road

Philip Handler (1939), Ph.D.
Professor of Biochemistry and Nutrition — 2529 Perkins Road

* Absent on sabbatical leave, spring semester, 1959-60.
† Absent on sabbatical leave, 1959-60.

Frank William Hanft (1959), LL.B., S.J.D.
Visiting Professor of Law — Bowling Creek Road, Chapel Hill, N. C.

John Kennedy Hanks (1954), M.A.
Associate Professor of Music and Lecturer in Church Music — 1810 Glendale Avenue

Frank Allan Hanna (1948), Ph.D.
Professor of Economics — 2239 Cranford Road

Oscar Carl Edvard Hansen-Prüss (1930), M.D.
Professor of Medicine in Charge of Clinical Microscopy — 3303 Surrey Road, Hope Valley

*Earl Thomas Hanson (1946), Ph.D.
Assistant Professor of Political Science — 613 Swift Avenue

†Laura Harbison (1958), B.S.
Instructor in Nursing

Aaren Maynor Hardee (1956), A.M.
Instructor in Romance Languages — 2417 Bruton Road

Kile Clinton Hardesty (1958), M.D.
Associate Professor of Radiology — 1007 Monmouth Avenue

Paul Hardin, III (1958), LL.B.
Assistant Professor of Law — 3327 Chapel Hill Road

‡Ellwood Scott Harrar (1936), Ph.D.
Professor of Wood Technology — 2228 Cranford Road

Paul Harrawood (1956), M.S. in C.E.
Assistant Professor of Civil Engineering — 105 West Woodridge Drive

Jerome Sylvan Harris (1936), M.D.
Professor of Pediatrics and Associate Professor of Biochemistry — 2907 Hope Valley Road

Reece T. Harris (1959), Ph.D.
Research Instructor in Mathematics — 1003 Camden Avenue

Francis Parks Harrison (1947), Ph.D.
Associate Professor of Physical Education — 2722 Circle Drive

Julian Deryl Hart (1930), M.D.
Professor of Surgery — 2324 Duke University Road

George Corbin Harwell (1935), Ph.D.
Associate Professor of English — 2115 Wilson Street

Charles Roy Hauser (1929), Ph.D.
Professor of Chemistry — 1020 Rosehill Avenue

Murray Havens (1959), Ph.D.
Assistant Professor of Political Science — E23 Westover Park Apartments

Caroline Elizabeth Helmick (1949), M.D.
Associate in Preventive Medicine and Public Health and Director of Student Health, Woman's College — Infirmary, East Campus

James Paisley Hendrix (1938), M.D.
Associate Professor of Medicine and Therapeutics — 144 Pinecrest Road

Mrs. Mildred L. Hendrix (1958), B.S.
Assistant Professor of Aesthetics, Art, and Music — 144 Pinecrest Road

Simeon K. Heninger (1955), B.Litt. (Oxon.), Ph.D.
Assistant Professor of English — 702 Buchanan Boulevard

§Paul Henry (1958), Docteur es Lettres,
Visiting Professor of Philosophy

Stuart C. Henry (1959), B.D., Ph.D.
Associate Professor of American Christianity — 101 Faculty Apartments

* Absent on sabbatical leave, 1959-60.
† Resigned April 30, 1960.
‡ Absent on sabbatical leave, fall semester, 1959-60.
§ Resigned May 31, 1959.

C. Nash Herndon (1958), M.D.
Visiting Lecturer of Preventive Medicine in Genetics and Heredity — Bowman Gray School of Medicine, Winston-Salem, N. C.

Stephen Duncan Heron, Jr. (1950), Ph.D.
Assistant Professor of Geology — 1504 Anderson Street

Frederick L. Herzog (1960), B.D., Th.M., Th.D.
Associate Professor of Systematic Theology — 2936 Chapel Hill Road

Duncan Charteris Hetherington (1930), Ph.D., M.D.
Professor of Anatomy — K3B University Apartments

Albert Heyman (1953), M.D.
Associate Professor of Medicine — 1405 Woodburn Road

Arthur Owen Hickson (1929), Ph.D.
Professor of Mathematics — Box 27, West Durham Station

Douglas Greenwood Hill (1931), Ph.D.
Professor of Chemistry — Box 275, Route 2, St. Mary's Road

L. W. Hill (1958), B.S., Lieutenant, U. S. Navy
Assistant Professor of Naval Science — 3028 Glendale Avenue

Hans J. Hillerbrand (1959), Ph.D.
Assistant Professor of Modern European Christianity — 2207 Lafayette Street

Frederick R. Hine (1958), M.D.
Assistant Professor of Psychiatry — 2317 Prince Street

Marie Hinman (1959), M.S.
Instructor in Psychology and Director of Nursery — D-2 Westover Park Apartments

Marcus Edwin Hobbs (1935), Ph.D.
Professor of Chemistry — 115 Pinecrest Road

Clyde Hogsed (1957), M.A.
Assistant Professor of Medical-Surgical Nursing — Dogwood Acres, Box 91 Chapel Hill, N. C.

Carol Hogue (1957-58; 1960), M.S.N.
Instructor in Nursing — 3504 East Oak Drive

Leslie Benjamin Hohman (1946), M.D.
Professor of Psychiatry and Assistant Professor of Pediatrics — 1520 Hermitage Court

Clyde N. Holland (1957), B.S. in C.E.
Instructor in Civil Engineering — 314 Faculty Apartments

Irving Brinton Holley, Jr. (1947), Ph.D.
Associate Professor of History — 2506 Wrightwood Avenue

William Hollister (1955), M.D.
Associate in Surgery — Moore County Hospital Pinehurst, N. C.

Frederic B.M. Hollyday (1956), Ph.D.
Assistant Professor of History — Apartment 3 2215 Elder Street

Frances Virginia Lee Holton (1947), M.A.
Associate Professor of Physical Education — 407 Erwin Apartments

Andrew D. Hook (1959), M.A.
Temporary Instructor in English — 812 Onslow Street

Robert J. Hooper (1957), M.A., Litt.D.
Instructor in Romance Languages — 202 Faculty Apartments

Calvin Bryce Hoover (1925), Ph.D.
James B. Duke Professor of Economics — 1702 Duke University Road

Edward Charles Horn (1946), Ph.D.
Professor of Zoology — 818 East Forest Hills Boulevard

Christopher Horsfield (1959), M.A.
Temporary Instructor in Mathematics — 214 Faculty Apartments

Doris Ahlee Howell (1955), M.D.
Associate Professor of Pediatrics — 1419 Woodburn Road

*Cynthia Hudspeth (1957), R.N., B.S.N.
Instructor in Nursing

Wayland Elroy Hull (1953), Ph.D.
Assistant Professor of Physiology — 2519 Pickett Road

†Harold J. Humm (1954), Ph.D.
Associate Professor of Botany — 2528 Wrightwood Avenue

†Don Dougan Humphrey (1945), Ph.D.
Professor of Economics — 2802 Legion Avenue

Mrs. Wanda Sanborn Hunter (1947), Ph.D. — Apartment 2
Associate Professor of Zoology — 803 Lancaster Street

Allan S. Hurlburt (1956), Ph.D.
Professor of Education — 112 Buchanan Boulevard

Mary Huse (1959), Ph.D.
Associate in Medical Psychology in Department of Psychiatry and Lecturer in Department of Psychology — Ephesus Church Road

Thelma Marguerite Ingles (1949), R.N., M.A.
Associate Professor of Nursing Education and Director, Division of Nursing Education — 118 Newell Street

O. Kelly Ingram (1959), B.D.
Associate Professor of Applied Theology and Associate Dean of Students — 3705 Pendergrass Street

John Innis (1959), B.S., Captain, U. S. Air Force
Assistant Professor of Air Science — 2200 Kirkwood Drive

Ann Madeline Jacobansky (1953), R.N., M.Ed.
Professor of Nursing — 880 Louise Circle

Marianna Duncan Jenkins (1948), Ph.D.
Associate Professor of Art — 619 Morehead Avenue

Bronislas de Leval Jezierski (1958), Ph.D.
Assistant Professor of Russian Language and Literature — 3800 Hillgrand Drive

‡Frederick Charles Joerg (1947), M.B.A.
Professor of Economics — 2116 Pershing Street

Betty Sue Johnson (1955), R.N., B.S.N.E.
Instructor in Psychiatric Nursing — Ryan Road, Route 5

Charles B. Johnson (1956), Ed.D.
Assistant Professor of Education — 833 Morreene Road

Gordon L. Johnson (1958), Ph.D. — Apartment C-3
Instructor in Chemistry — 808 Green Street

Terry Walter Johnson, Jr. (1954), Ph.D.
Associate Professor of Botany — 2408 Prince Street

Barney L. Jones (1956), B.D., Ph.D.
Assistant Professor of Religion — 2622 Pickett Road

‡Edward Ellsworth Jones (1953), Ph.D.
Associate Professor of Psychology — 1705 Forest Road

Thomas T. Jones (1958), M.D.
Associate in Medicine — 2701 Augusta Drive

Archibald Currie Jordan (1925), M.A.
Assistant Professor of English — 147 Pinecrest Road

§Brady Rimbey Jordan (1927), Ph.D.
Professor of Romance Languages — 117 Pinecrest Road

* Resigned August 31, 1959.
† Absent on leave, 1959-60.
‡ Absent on sabbatical leave, 1959-60.
§ Absent on sabbatical leave, fall semester, 1959-60.

*Lemuel Russell Jordan (1956), M.A.
Assistant Professor of Hospital Administration and Assistant Superintendent of Duke Hospital in Charge of Out-Patient Clinic

Helen Louise Kaiser (1943), R.P.T.T.
Associate Professor of Physical Therapy — 804 Berkeley Street

William Arthur Kale (1952), B.D.
Professor of Christian Education — 500 East Markham Avenue

Mrs. Dorothy L. Kamin (1958), R.N., C.P.H.N.
Acting Instructor in Nursing — 2417 Perkins Road

Henry Kamin (1948), Ph.D.
Associate Professor of Biochemistry — 2417 Perkins Road

†Nancy Jean Kearns (1958), B.S.
Instructor in Physical Education

Thomas F. Keller (1959), Ph.D.
Assistant Professor of Economics — 1024 West Markham Avenue

Walter Kempner (1934), M.D.
Professor of Medicine — 1505 Virginia Avenue

Ronald Kenny (1958), B.S.
Instructor in Zoology — 1010 Gloria Avenue

Van Leslie Kenyon, Jr. (1945), M.M.E.
Professor of Mechanical Engineering — Route 2, Hillsboro, N. C.

Grace Pardridge Kerby (1947), M.D.
Associate Professor of Medicine — 707 Louise Circle

Alan C. Kerckhoff (1958), Ph.D.
Associate Professor of Sociology — 1921 Essex Road

Gregory Adams Kimble (1952), Ph.D.
Professor of Psychology — 2513 Wrightwood Avenue

Norman Kirschner (1956), Ph.D.
Assistant Professor of Experimental Surgery and Associate in Biochemistry — 614 North Gregson Street

Mrs. Janet Smith Kistler (1957), M.A.
Instructor in Physical Education — 703 Louise Circle

William Klenz (1947), Ph.D.
Assistant Professor of Music — 24 Rogerson Drive, Chapel Hill, N. C.

John L. Kline, Jr. (1958), B.A., Lieutenant Commander, U. S. Navy
Assistant Professor of Naval Science — 301 E. Raleigh Street, Siler City, N. C.

Peter H. Klopfer (1958), Ph.D.
Assistant Professor of Zoology — Route 1, Box 293

‡William H. Knisely (1956), Ph.D.
Associate Professor of Anatomy and Assistant Professor of Medicine

Paul R. Knox (1959), M.D.
Associate in Anesthesiology — Powell Street, Chapel Hill, N. C.

Sigmund Koch (1942-47; 1948), Ph.D.
Professor of Psychology — Route 2, Durham

§Rachel Koefod (1958)
Visiting Instructor in Music

¶Ivo Kohler (1960), Ph.D.
Visiting Professor of Psychology

Jack L. Kostyo (1959), Ph.D.
Assistant Professor of Physiology — #2 Carwin Apartments, 2213 Elder Street

* Resigned September 30, 1959.
† Resigned May 31, 1959.
‡ Resigned July 31, 1959.
§ Resigned May 31, 1959.
¶ Resigned May 31, 1960.

John C. Kouns (1957), D.D.S.
Associate in Dentistry — Sourwood Drive, Chapel Hill, N. C.

Paul Jackson Kramer (1931), Ph.D.
James B. Duke Professor of Botany — 2251 Cranford Road

*Robert Kramer (1947), LL.B.
Professor of Law — 108 Pinecrest Road

Edward Kready Kraybill (1939), M.S.E.
Associate Professor of Electrical Engineering — 2726 Circle Road

Mrs. Juanita Kreps (1955), Ph.D.
Assistant Professor of Economics — Morgan Creek Road, Chapel Hill, N. C.

†William R. Krigbaum (1952), Ph.D.
Associate Professor of Chemistry — 2015 Woodland Drive

Mary Eleanor Krummel (1958), A.M.
Instructor in Romance Languages — 2118 Englewood Avenue

Jan Magnus Krynski (1959), A.M.
Instructor in Russian — 311 West Trinity Avenue

‡George Frederic Kuder (1948), Ph.D.
Professor of Psychology — 2516 Perkins Road

Sudhir Kumar (1958), Ph.D.
Visiting Lecturer in Civil Engineering — 709 Yancey Street

Edward Charles Kunkle (1948), M.D.
Professor of Neurology — 2525 Perkins Road

Weston LaBarre (1946), Ph.D.
Professor of Anthropology — 1311 Alabama Avenue

†Creighton Lacy (1953), B.D., Ph.D.
Associate Professor of Missions and Social Ethics — 2714 Dogwood Road

Martin Lakin (1958), Ph.D.
Assistant Professor of Medical Psychology and Assistant Professor of Psychology — 1840 Forest Road

Charles Earl Landon (1926), Ph.D.
Professor of Economics — 1514 Edgevale Road

Thomas A. Langford (1956), B.D., Ph.D.
Assistant Professor of Religion — 2513 Glendale Avenue

John Tate Lanning (1927), Ph.D.
Professor of History — 3007 Surrey Road, Hope Valley

Jeanne Larkin (1958), Ph.D.
Temporary Instructor in Zoology — K-3D Duke University Road

John E. Larsh, Jr. (1943), Sc.D.
Professor of Parasitology — Memorial Hospital, Chapel Hill, N. C.

Arthur Larson (1958), D.C.L.
Professor of Law and Director of the World Rule of Law Center — 3408 Dover Road, Hope Valley

John Laszlo (1960), M.D.
Associate in Medicine — 2218 Pratt Street

Elvin Remus Latty (1937), J.D., J.Sc.D
Professor of Law — 3620 Hathaway Road, Hope Valley

Richard H. Leach (1955), Ph.D.
Assistant Professor of Political Science — 1419 Dollar Avenue

Maurice Lesage (1959), M.D.
Associate in Experimental Surgery — Old Airport Road, Chapel Hill, N. C.

Harold Walter Lewis (1949), Ph.D.
Professor of Physics — 2307 Sprunt Street

* Absent on leave, October 1, 1959-August 31, 1960.
† Absent on sabbatical leave, 1959-60.
‡ Absent on leave, 1959-60.

Martha Modena Lewis (1933), M.A.
Professor of Physical Education — 407 Erwin Apartments

Ralph Elton Lewis (1941), M.S. in M.E.
Assistant Professor of Mechanical Engineering — 1401 Alabama Avenue

Donald Limoli (1958), M.A.
Instructor in History — 813½ West Knox Street

Charles Harris Livengood, Jr. (1946), LL.B.
Professor of Law — 2804 Chelsea Circle, Hope Valley

Daniel A. Livingstone (1956), Ph.D.
Associate Professor of Zoology — 816 Starmount Drive

Charles E. Llewellyn, Jr. (1955), M.D.
Assistant Professor of Psychiatry — 3525 Hamstead Court

Barry L. Logan (1958), M.A.
Instructor in English — Route 1, Ervin Circle

Arthur Hill London, Jr. (1932), M.D.
Assistant Professor of Pediatrics — 808 Wells Steeet

Ernest Croft Long (1956), M.D.
Associate Professor of Physiology and Pharmacology and Associate in Pediatrics — Route 1, Box 204B Erwin Road

Mildred Long (1959), M.S.W.
Associate in Psychiatric Social Work — 904 Lancaster Street

Hans Löwenbach (1940), M.D.
Professor of Psychiatry and Assistant Professor of Pediatrics — Route 3, Box 79

Charles Lucien Baker Lowndes (1934), S.J.D.
James B. Duke Professor of Law — 2016 Club Boulevard

William S. Lynn, Jr. (1954), M.D.
Associate Professor of Medicine and Associate in Biochemistry — Bristol Road, Hope Valley

Angus M. McBryde (1931), M.D.
Professor of Pediatrics — 410 East Forest Hills Boulevard

Mrs. Ella McCall (1958), M.S.
Instructor in Psychiatric Nursing — 101 West Club Boulevard

Thomas Robert McCants (1959), B.S., Commander, U. S. Navy
Associate Professor of Naval Science — 2309 Carver Street

John E. McCarthy (1958), B.S., Lieutenant Commander, U. S. Navy
Assistant Professor of Naval Science — 619 Hammond Street

Kenneth Scott McCarty (1959), Ph.D.
Associate Professor of Biochemistry — 2713 Dogwood Road

Wallace McClure (1958), Ph.D.
Consulting Director of the World Rule of Law Center and Visiting Professor of Law — 204 Faculty Apartments

*Charles O. McDonald (1956), M.A.
Instructor in English

Gelolo McHugh (1946), Ph.D.
Assistant Professor of Psychology — 1010 Monmouth Avenue

Henry McIntosh (1955), M.D.
Associate Professor of Medicine — 2406 N. Duke Street Extension

James Thomas McKeel (1956), B.E.E.
Instructor in Electrical Engineering — 2622 Charlotte Street

John C. McKinney (1957), Ph.D.
Professor of Sociology and Professor of Medical Sociology in Department of Psychiatry — 2713 Circle Drive

Mary Helen McLachlan (1957), M.A.
Associate Professor of Dietetics — 2022 Bivins Street

* Resigned August 31, 1959.

*Jonathon Collins McLendon (1952), Ph.D. *Associate Professor of Education*	
Robert M. McLeod (1955), Ph.D. *Assistant Professor of Mathematics*	4505 Duke Station
Harry Thurman McPherson (1955), M.D. *Associate Professor of Medicine*	3200 Oxford Drive
Samuel D. McPherson, Jr. (1949), M.D. *Associate in Ophthalmology*	29 Oak Drive
John Nelson Macduff (1956), M.M.E. *Professor of Mechanical Engineering*	2733 Dogwood Road
Douglas Blount Maggs (1930), J.D., S.J.D. *Professor of Law*	3940 Dover Road Hope Valley
†Robert A. Maguire (1958), M.A. *Instructor in Russian Language and Literature*	Apartment M 2729 Brown Avenue
Mary Catherine Male (1958), M.A. *Assistant Professor of Dietetics*	882 Louise Circle
Alan Krebs Manchester (1929), Ph.D. *Professor of History*	2016 Myrtle Drive
Clyde Leonard Manschreck (1954), B.D., Ph.D. *Associate Professor of Religion*	2403 Prince Street
‡George Margolis (1947), M.D. *Professor of Pathology*	
Alexander R. Margulis (1957), M.D., Captain, U. S. Army *Visiting Associate in Radiology*	Fort Bragg, N. C.
Joseph Eldridge Markee (1943), Ph.D. *James B. Duke Professor of Anatomy and Assistant Dean in Charge of Admissions in School of Medicine*	1015 Demerius Street
Sidney David Markman (1947), Ph.D. *Associate Professor of Art History and Archaeology*	919 Urban Avenue
‡Norman Marshall (1958), Ph.D. *Associate in Physiology*	
§Mrs. Shirley Martin (1959), M. S. *Instructor in Nursing*	
William Cary Maxwell (1930), Ph.D. *Associate Professor of German*	142 Pinecrest Road
¶Henry Bertram Mayo (1960), Ph.D. (Oxon.) *Visiting Professor of Political Science*	
Otto Meier, Jr. (1934), Ph.D. *Professor of Electrical Engineering*	113 Pinecrest Road
Joan Meiller (1959), M.D. *Assistant Professor of Psychiatry*	2314 Wilson Street
Richard Meiller (1958), M.D. *Assistant Professor of Psychiatry*	2314 Wilson Street
**Gary H. Meisters (1958), Ph.D. *Research Instructor in Mathematics*	
Elijah Eugene Menefee, Jr. (1940), M.D. *Professor of Medicine*	2205 Cranford Road
Horst Meyer (1959), Docteur ès Sciences *Assistant Professor of Physics*	1411 Anderson Street
M. Victor Michalak (1950), A.M. *Assistant Professor of English*	2432 Wrightwood Avenue

* Resigned January 31, 1960.
† Absent on leave, 1959-60.
‡ Resigned June 30, 1959.
§ Resigned February 1, 1960.
¶ Resigned May 31, 1960.
** Resigned, August 31, 1959.

Gustavus H. Miller (1955), Ph.D. — 70 Hays Road
Assistant Professor of Romance Languages — Chapel Hill, N. C.

*Archie E. Millis (1956), B.S.
Assistant Professor of Hospital Administration

†George J. Minty (1958), M.A.
Research Instructor in Mathematics

Carol L. Mitcham (1955), R.N., B.S. — 25 Rogerson Drive
Instructor in Obstetric Nursing — Chapel Hill, N. C.

Mrs. Jo Anne Mitchell (1959), M.S.
Instructor in Nursing — #1, Atlas Apartments

Margaret Mitchell (1957), R.N., B.S.N.E.
Instructor in Nursing — 2728 Brown Avenue

‡John Theodore Mohat (1955), Ph.D.
Visiting Assistant Professor of Mathematics

Robert John Montfort (1940), B.A.
Assistant Professor of Physical Education — 3300 Cole Mill Road

Earl George Mueller (1945), Ph.D.
Associate Professor of Art — 1108 Watts Street

Mrs. Julia Wilkinson Mueller (1939-41; 1946), M.A.
Associate Professor of Music — 1108 Watts Street

Robert J. Murphy, Jr. (1950), M.D.
Associate in Pediatrics — Hillsboro, N. C.

Thomas N. Nash, Jr. (1959), B.S. in M.E.
Instructor in Mechanical Engineering — 916 Monmouth Avenue

Blaine S. Nashold, Jr. (1957), M.Sc., M.D.
Assistant Professor of Surgery in Division of Neurosurgery — 1511 Woodburn Drive

Aubrey Willard Naylor (1952), Ph.D.
Professor of Botany — 881 Louise Circle

§Glenn Robert Negley (1946), Ph.D.
Professor of Philosophy — 3610 Hathaway Road

¶Dalmus Nelson (1959), Ph.D.
Visiting Assistant Professor of Political Science

Ernest William Nelson (1926), Ph.D. — Box 6065
Associate Professor of History — College Station

**Karla Walter Nelson (1959), M.D.
Assistant Professor of Psychiatry and Instructor in Pediatrics

M. Wilson Nesbitt, Jr. (1957), B.D.
Assistant Professor of Church Administration — 2401 Englewood Avenue

Barbara Carol Newborg (1952), M.D.
Associate in Medicine — 1503 Virginia Avenue

E. G. Newman (1960), M.D.
Associate in Psychiatry — 2614 Charlotte Street

Henry Winston Newson (1948), Ph.D.
Professor of Physics — 1111 North Gregson Street

Claude Nichols (1958), M.D.
Assistant Professor of Psychiatry — 1515 Woodburn Road

William McNeal Nicholson (1935), M.D.
Professor of Medicine and Assistant Dean in Charge of Postgraduate Education — 824 Anderson Street

Walter McKinley Nielsen (1925), Ph.D.
James B. Duke Professor of Physics — 139 Pinecrest Road

* Resigned, July 1, 1959.
† Resigned, August 31, 1959.
‡ Resigned, May 31, 1959.
§ Absent on sabbatical leave, spring semester 1959-60.
¶ Resigned, May 31, 1960.
** Resigned, December 31, 1959.

William C. North (1959), Ph.D., M.D.
Assistant Professor of Anesthesiology — 1514 Fir Street

Walter D. Obrist (1956), Ph.D.
Associate Professor of Medical Psychology in Department of Psychiatry and Assistant Professor of Psychology — 2521 Pickett Road

Guy Leary Odom (1943), M.D.
Professor of Neurosurgery — 2812 Chelsea Circle, Hope Valley

Daniel Alexander Okun (1957), Ph.D.
Visiting Lecturer in Civil Engineering — Dogwood Drive, Chapel Hill, N. C.

*Marion Olansky (1957), M.D.
Associate in Pediatrics

†Sidney Olansky (1956), M.D.
Associate Professor of Dermatology and Syphilology

F. Hodge O'Neal (1959), LL.B., S.J.D.
Professor of Law — 2816 Fairlawn Road

Henry J. Oosting (1932), Ph.D.
Professor of Botany — 2642 University Drive

Edward Stewart Orgain (1934), M.D.
Professor of Medicine — 3321 Devon Road, Hope Valley

Roderick B. Ormandy (1953), M.A.
Assistant Professor of Medical Speech Pathology — 14 Meadowbrook Drive

Robert Tappan Osborn (1954), B.D., Ph.D.
Assistant Professor of Religion — 216 Monmouth Avenue

Suydan Osterhout (1959), Ph.D., M.D.
Associate in Medicine and Instructor in Microbiology — 1011 Carolina Avenue

William I. O'Sullivan (1959), Ph.D.
Visiting Assistant Professor and Research Associate in Chemistry — 1507 Pettigrew Street

Athos Ottolonghi (1959), M.D.
Assistant Professor of Pharmacology — 1003 Demerius Street

John R. Overman (1955), M.D.
Associate Professor of Bacteriology and Assistant Professor of Medicine — 1107 Knox Street

Harry Ashton Owen, Jr. (1951), B.E.E., M.S.E.
Associate Professor of Electrical Engineering — 1506 Woodburn Road

John Palacios (1959), Ph.D.
Assistant Professor of Education and Senior Counselor in Bureau of Testing and Guidance — 227 Dacian Avenue

‡Aubrey Edwin Palmer (1944), B.S. in E., C.E.
Associate Professor of Civil Engineering — 2525 Highland Avenue

Harold Talbot Parker (1939), Ph.D.
Professor of History — 923 Dacian Avenue

§Joseph B. Parker, Jr. (1953), M.D.
Associate Professor of Psychiatry and Chief of Psychiatry at Veterans Hospital

Roy T. Parker (1954), M.D.
Associate Professor of Obstetrics and Gynecology — 111 Pinecrest Road

Russell J. Parkinson (1959), M.A.
Temporary Instructor in History — 1404 Duke University Road

¶Oscar A. Parson (1954), Ph.D.
Associate Professor of Psychology and Associate Professor of Medical Psychology

* Resigned, September 1, 1959.
† Resigned, September 15, 1959.
‡ Absent on sabbatical leave, spring semester, 1959-60.
§ Resigned, August 15, 1959.
¶ Resigned, August 31, 1959.

*Percy Herbert Partridge (1959), M.A.
Visiting Professor of Political Science

Joel Francis Paschal (1954), LL.B., Ph.D.
Professor of Law — 4003 Chapel Hill Road

†Mrs. Evelyn Parker Patrick (1957), B.S.N.
Instructor in Pediatric Nursing

Ransom Rathbone Patrick (1954), Ph.D.
Professor of Aesthetics and Art — 116 Pinecrest Road

John Patton (1959), M.D.
Associate in Psychiatry — Highland Hospital, Asheville, N. C.

Lewis Patton (1926), Ph.D.
Associate Professor of English — 614 Swift Avenue

William Bernard Peach (1951), Ph.D.
Associate Professor of Philosophy — 920 Dacian Avenue

Talmadge Lee Peele (1939), M.D.
Associate Professor of Anatomy, Assistant Professor of Medicine, Assistant Professor of Pediatrics, and Lecturer in Psychology — KD2 University Apartments

Charles Henry Peete, Jr. (1953), M.D.
Assistant Professor of Obstetrics and Gynecology — 2027 Woodrow Street

William P. J. Peete (1955), M.D.
Assistant Professor of Surgery and Assistant to the Dean of the School of Medicine — 2816 Winton Road

‡Kenneth E. Penrod (1950), Ph.D.
Professor of Physiology and Pharmacology and Assistant Dean of the School of Medicine

Harold Sanford Perry (1932), Ph.D.
Associate Professor of Botany — 2302 Cranford Road

Solomon Paul Perry (1953), M.D.
Assistant Professor of Radiology — 3602 Rugby Road

Elbert Lapsley Persons (1930), M.D.
Professor of Medicine and Associate Professor of Preventive Medicine and Public Health — 723 Anderson Street

Walter Scott Persons (1930), A.B.
Associate Professor of Physical Education — 612 Swift Avenue

Ernst Peschel (1953), M.D.
Assistant Professor of Medicine — 2306 Pershing Street

Ray C. Petry (1937), Ph.D., LL.D.
Professor of Church History — 128 Pinecrest Road

Olan Lee Petty (1952), Ph.D.
Associate Professor of Education — 4505 Ryan Street

John Bernard Pfeiffer, Jr. (1949), M.D.
Associate Professor of Medicine — 3414 Rugby Road

§James Henry Phillips (1946), Ph.D.
Associate Professor of Religion — 2517 Perkins Road

Jane Philpott (1951), Ph.D.
Associate Professor of Botany — 2260 Cranford Road

Henry Floyd Pickett (1935), A.B.
Associate in Medical Art and Illustration and Photographer — 1212 W. Cornwallis Road

Kenneth LeRoy Pickrell (1944), M.D.
Professor of Plastic Surgery — 3 Sylvan Road

* Resigned, January 31, 1960.
† Resigned, August 31, 1959.
‡ Resigned, June 30, 1959.
§ Absent on sabbatical leave, spring semester, 1959-60.

Leo Pine (1957), Ph.D.
Assistant Professor of Microbiology — 2402 Chapel Hill Road

Jacques C. Poirier (1955), Ph.D.
Assistant Professor of Chemistry — 210 West Lavender Street

Victor Politano (1957), M.D.
Associate Professor of Urology — 2119 Pershing Street

*Amelia J. Polnik (1958), Ph.D.
Temporary Instructor in Zoology

Francis Ross Porter (1930), B.S.
Professor of Hospital Administration and Director of Duke Medical Center Foundation — Hillsboro, N. C.

Richard M. Portwood (1959), M.D.
Associate in Medicine — 1720 Vista Street

Raymond W. Postlethwait (1955), M.D.
Professor of Surgery and Chief of Surgery at Veterans Hospital — Erwin Road

Mary Alverta Poston (1930), A.M.
Associate in Bacteriology — 13 Alistair Court
Swift Avenue

†Mary Poteat (1935), Ph.D.
Assistant Professor of English — 103 Faculty Apartments

William M. Poteat (1960), B.D., Ph.D.
Associate Professor of Christianity and Culture — Greenwood Road
Chapel Hill, N. C.

Benjamin E. Powell (1946), Ph.D.
Professor in the Faculty of Arts and Sciences — 3609 Hathaway Road
Hope Valley

Thomas C. Powell (1957), B.S., Captain, U. S. Air Force
Instructor in Air Science — 1024 Gloria Avenue

Richard Lionel Predmore (1950), D.M.L.
Professor of Romance Languages — 2413 Perkins Road

Jack J. Preiss (1959), Ph.D.
Associate Professor of Medical Sociology in Department of Psychiatry and Associate Professor of Sociology in Department of Sociology — 1017 Anderson Street

James Ligon Price, Jr. (1952), Ph.D.
Associate Professor of Religion — 2723 Circle Drive

Reynolds Price (1958), A.B.
Instructor in English — Route 1, Box 263

Catherine Proctor (1958), B.S.
Instructor in Physical Education — Box 6966, College Station
1912 House Avenue

Jesse Harris Proctor, Jr. (1958), Ph.D.
Assistant Professor of Political Science — 613 Swift Avenue

Albert Elsworth Pugh (1953), M.D.
Assistant Professor of Medicine and Chief, Professional Service, Veterans Hospital — Staff Headquarters
Veterans Hospital

Richard E. Quaintance, Jr. (1958), M.A.
Instructor in English — Apartment 4D
944 Lambeth Circle

‡Vergil Erwin Queen (1956), B.D.
Associate Professor of Church Administration

Louis D. Quin (1956), Ph.D.
Assistant Professor of Chemistry — 300 West Lavender Street

Gaylin W. Quinn (1957), D.D.S.
Associate Professor of Orthodontics — 806 East Forest Hills Boulevard

Charles William Ralston (1953), B.S., M.F., Ph.D.
Associate Professor of Forest Soils — 2531 Wrightwood Avenue

* Resigned, May 31, 1959.
† Absent on sabbatical leave, spring semester, 1959-60.
‡ Resigned, August 31, 1959.

Dale B. J. Randall (1957), Ph.D.
Instructor in English — 111 Watts Street

Robert Stanley Rankin (1927), Ph.D.
Professor of Political Science — 1227 Vickers Avenue

Guy H. Ranson (1959), B.D., Ph.D.
Visiting Associate Professor of Christian and Social Ethics — 2404 West Club Boulevard

Benjamin Ulysses Ratchford (1928), Ph.D.
Professor of Economics — 133 Pinecrest Road

Esther Ratliff (1957), B.S.
Associate Professor of Dietetics — 402 Buchanan Boulevard

Israel Thomas Reamer (1931), Ph.G.
Associate in Pharmacy — 2406 West Club Boulevard

Kenneth James Reardon (1947), A.M.
Associate Professor of English — 2821 Winton Road

Robert James Reeves (1930), M.D.
Professor of Radiology — 920 Anderson Street

Edwin Kelsey Regen (1951), B.D., D.D.
Lecturer in Church Administration — 1106 Watts Street

Mrs. Wally Reichenberg-Hackett (1946), Ph.D.
Associate Professor of Psychology — College Station

*Mary Reiter (1958), M.A.
Assistant Professor of Medical-Surgical Nursing

Thomas D. Reynolds (1953), Ph.D.
Assistant Professor of Mathematics — 2502 Wrightwood Avenue

Joseph Banks Rhine (1927), Ph.D.
Director of the Parapsychology Laboratory — Route 3, Hillsboro, N. C.

†John McFarlane Rhoads (1956), M.D.
Associate Professor of Psychiatry and Visiting Lecturer of Pastoral Care

McMurry S. Richey (1954), B.D., Ph.D.
Associate Professor of the Philosophy of Christian Education — 2725 Dogwood Road

Harold Perry Richmond (1957), B.S. in E.E.
Lecturer in Mechanical Engineering — 807 Hermitage Court

Dana Phelps Ripley (1959), M.A.
Instructor in Romance Languages — Apartment 1B, 2724 Erwin Road

Richard Risley (1958-February, 1959; September, 1959)
Instructor in Physical Education — Apartment 21E, 2723 Brown Avenue

Henry Stoutte Roberts, Jr. (1948), Ph.D.
Associate Professor of Zoology — 2527 Wrightwood Avenue

John Henderson Roberts (1931), Ph.D.
Professor of Mathematics — 2813 Legion Avenue

Herman Röbl (1959), Ph.D., Dr. habil.
Visiting Assistant Professor of Physics — 2008 West Club Boulevard

Eliot H. Rodnick (1949), Ph.D.
Professor of Psychology and Consultant in Medical Psychology — 2806 Legion Avenue

Robert Samuel Rogers (1937), Ph.D., F.A.A.R.
Professor of Latin — 148 Pinecrest Road

Theodore Ropp (1938), Ph.D.
Professor of History — 302 East Woodridge Drive

Norman F. Ross (1937), D.D.S.
Associate Professor of Dentistry — 2811 Chelsea Circle, Hope Valley

* Resigned, December 31, 1959.
† Resigned, May 31, 1959.

Theodore Rosett (1959), Ph.D.
Associate in Biochemistry — 1713 James Street

Robert Seaman Rowe (1956), D. Eng.
J. A. Jones Professor of Civil Engineering — 2711 Circle Drive

Donald Francis Roy (1950), Ph.D.
Associate Professor of Sociology — 604 North Gregson Street

John Jesse Rudin, II (1945), B.D., Ph.D.
Associate Professor of Speech — 1017 Rosehill Avenue

Mabel F. Rudisill (1948), Ph.D.
Associate Professor of Education — 2121 Woodrow Street

Julian Meade Ruffin (1930), M.D.
Professor of Medicine — 816 Anderson Street

Ralph Wayne Rundles (1945), Ph.D., M.D.
Professor of Medicine — 132 Pinecrest Road

*James Rutherford (1959), Ph.D.
Visiting Professor of History

Reames Hawthorne Sales (1949), B.D., Ph.D.
Assistant Professor of Religion — 2411 Prince Street

Herman Salinger (1955), Ph.D.
Professor of German — 3444 Rugby Road, Hope Valley

Herbert A. Saltzman (1957), M.D.
Associate in Medicine — 2207 Bivins Street

John Salzano (1958), Ph.D.
Assistant Professor of Physiology — 803 Starmont Drive

Karl Sandberg (1959), M.A.
Instructor in Romance Languages — 2117 Englewood Avenue

Muriel I. Sandeen (1950), Ph.D.
Assistant Professor of Zoology — 708 Louise Circle

Aaron P. Sanders (1956), M.A.
Assistant Professor of Radiology and Director of the Isotope Laboratory — 2501 Banner Street

Charles Richard Sanders (1937), Ph.D.
Professor of English — 103 Pinecrest Road

†Mrs. Eugenia Curtis Saville (1947), M.A.
Associate Professor of Music — 1103 Anderson Street

†Lloyd Blackstone Saville (1946), Ph.D.
Professor of Economics — 1103 Anderson Street

John Henry Saylor (1928), Ph.D.
Professor of Chemistry — 2500 Perkins Road

Herman Max Schiebel (1939), M.D.
Associate in Surgery — 1020 Anderson Street

‡Theodor W. Schmidt (1958), Ph.D.
Visiting Assistant Professor of Mathematics

§Knut Schmidt-Nielsen (1952), Mag.Sc., Ph.D.
Professor of Zoology — 2524 Wrightwood Avenue

Mrs. Bodil Schmidt-Nielsen (1956), D.D.S., Ph.D.
Associate Research Professor of Zoology — 2524 Wrightwood Avenue

George C. Schoolfield (1959), Ph.D.
Associate Professor of German — 1026 West Trinity Avenue

Franz Schrader (1959), Ph.D.
Visiting Professor of Zoology and Charles W. Hargitt Senior Research Fellow — 2717 Dogwood Road

* Resigned, January 31, 1960.
† Absent on leave, 1959-60.
‡ Resigned, January 31, 1959.
§ Absent on sabbatical leave, 1959-60.

Francis Xavier Schumacher (1937), B.S.
Professor of Forestry — 6 Sylvan Road

Nathan Schupper (1960), D.D.S.
Associate in Dentistry — 222 East Markham Avenue

Esther Louise Schwerman (1947), Ph.D.
Assistant Professor of English — 909 Lambeth Circle

*George William Schwert, Jr. (1946), Ph.D.
Professor of Biochemistry

William Evans Scott (1958), Ph.D.
Assistant Professor of History — 1311 Dollar Avenue

†William T. Scott, Jr. (1960), B.D.
Lecturer in Divinity School

Will Camp Sealy (1946), M.D.
Professor of Thoracic Surgery — 2232 Cranford Road

Walter James Seeley (1925), E.E., M.S.
James B. Duke Professor of Electrical Engineering — 1005 Urban Avenue

James Hustead Semans (1953), M.D.
Professor of Urology — 1415 Bivins Street

Richard K. Seymour (1958), Ph.D.
Assistant Professor of German — 1311 Carolina Avenue

Fred Shabel (1957), B.A.
Instructor in Physical Education — AG-3D University Apartments

‡A. W. Sharer (1958), M.A.
Temporary Instructor in Zoology

David Shaw (1959), Ph.D.
Assistant Professor of Medical Sociology in Department of Psychiatry and Assistant Professor of Sociology in the Department of Sociology — 1210 Anderson Street

Mildred Marguerite Sherwood (1939), R.N.
Associate in Pediatric Nursing — Baker House, Duke Hospital

John Herman Shields (1926), A.M.
Associate Professor of Accounting — 1315 Vickers Avenue

Melvin G. Shimm (1953), LL.B.
Professor of Law — 2429 Wrightwood Avenue

William Warner Shingleton (1947), M.D.
Professor of Surgery — 3866 Summerset Drive

Barry Shmavonian (1958), Ph.D.
Assistant Professor of Medical Psychology in Department of Psychiatry and Lecturer in Department of Psychology — 3101½ Wake Forest Road

Joseph Robert Shoenfield (1952), Ph.D.
Assistant Professor of Mathematics — 1003 East Camden Avenue

Herbert O. Sieker (1955), M.D.
Associate Professor of Medicine — 204 Forest Wood Drive

George Addison Silver, III (1946), M.D.
Assistant Professor of Psychiatry — 3910 Dover Road

Albert J. Silverman (1953), M.D.
Assistant Professor of Psychiatry — 2433 Wrightwood Avenue

Edward Christian Simmons (1947), Ph.D.
Professor of Economics — 2501 Perkins Road

Ida Simpson (1959), Ph.D.
Assistant Professor of Sociology — 31 Mount Bolus Road, Chapel Hill, N. C.

* Resigned, August 31, 1959.
† Resigned, May 31, 1960.
‡ Resigned, May 31, 1960.

William Hays Simpson (1930), Ph.D.
Associate Professor of Political Science — 1406 Dollar Avenue

Allan P. Sindler (1959), Ph.D.
Associate Professor of Political Science — 1506 Kent Street

Leroy C. Skinner (1959), M.A.
Instructor in Physical Education — Piedmont Apartments

Albert G. Smith (1951), M.D.
Associate Professor of Pathology — 3831 Summerset Drive

C. Gaddis Smith (1958), M.A.
Instructor in History — 3122 Oxford Drive

David Tillerson Smith (1930), M.D., Litt.D.
James B. Duke Professor of Bacteriology and Associate Professor of Medicine — 3437 Dover Road, Hope Valley

Grover C. Smith, Jr. (1952), Ph.D.
Assistant Professor of English — 1109 North Gregson Street

Hilrie Shelton Smith (1931), Ph.D., D.D., Litt.D.
James B. Duke Professor of American Religious Thought — 2721 Dogwood Road

Joel Smith (1958), Ph.D.
Associate Professor of Sociology — 2211 Morehead Avenue

John B.K. Smith (1953), M.B., Ch.B., M.D.
Associate in Psychiatry — Highland Hospital, Asheville, N. C.

*Joyce Smith (1957), R.N., B.S.N.E.
Instructor in Pediatric Nursing

Peter Smith (1959), Ph.D.
Assistant Professor of Chemistry — 3115 Mossdale Avenue

†Robert Sidney Smith (1932), Ph.D.
Professor of Economics — 2236 Cranford Road

Wirt W. Smith (1957), M.D.
Assistant Professor of Experimental Surgery — 3301 Surrey Road, Hope Valley

Joachim R. Sommer (1957), M.D.
Assistant Professor of Pathology — Box 3631, Duke Hospital

Madison Spach (1957), M.D.
Associate in Pediatrics — 2016 Sunset Avenue

Dorothy Spangler (1954), B.S. M.A.
Assistant Professor of Physical Education — 8 Atlas Apartments

Cooper Phillips Speaks (1958), M.A.
Instructor in English — G3C University Apartments

Joseph John Spengler (1934), Ph.D.
James B. Duke Professor of Economics — 2240 Cranford Road

Charles D. Spielberger (1955), Ph.D.
Assistant Professor of Medical Psychology and Assistant Professor of Psychology — 1710 Forest Road

Hertha D. E. Sponer (1935), Ph.D.
Professor of Physics — 3309 Avon Road, Hope Valley

Faye Eurlene Spring (1956), R.N., M.S.
Assistant Professor of Psychiatric Nursing — 2612 Roxboro Road

Dale Fisher Stansbury (1946), J.S.D.
Professor of Law — 1008 West Trinity Avenue

Eugene Anson Stead, Jr. (1947), M.D.
Florence McAlister Professor of Medicine — 2122 Myrtle Drive

Robert S. Stempfel, Jr. (1957), M.D.
Assistant Professor of Pediatrics — 3439 Rugby Road, Hope Valley

Charles Ronald Stephen (1950), M.D.C.M., D.A., R.C.P.& S.
Professor of Anesthesiology and Chief Anesthetist — 1608 University Drive

* Resigned, January 31, 1960.
†Absent on leave, 1959-60.

Harold Patty Stephenson (1957), Ph.D.
Associate Professor of Mechanical Engineering — 818 Starmont Drive

Lionel Stevenson (1955), B.Litt. (Oxon.), Ph.D., F.R.S.L.
James B. Duke Professor of English — 3106 Devon Road

William Franklin Stinespring (1936), Ph.D.
Professor of Old Testament — 1107 Watts Street

Frederick William Stocker (1943), M.D.
Associate Professor of Ophthalmology — 1124 West Forest Hills Boulevard

Margaret Stone (1957), B.A.
Temporary Instructor in Mathematics — 101 Faculty Apartments

*Alfred W. Stonier (1958), Ph.D.
Visiting Professor of Economics and Research Associate

Howard Austin Strobel (1948), Ph.D.
Associate Professor of Chemistry — 1510 Woodburn Road

†Hans H. Strupp (1958), Ph.D.
Visiting Lecturer in Psychology

Wippert Arnot Stumpf (1948), Ph.D.
Associate Professor of Education — 127 Pinecrest Road

Charles Woodrow Styron (1946), M.D.
Associate in Medicine — 615 St. Marys Street, Raleigh, N. C.

John D. Sullivan (1958), Ph.D.
Assistant Professor in School of Forestry — 877 Louise Circle

Elizabeth Read Sunderland (1939-42; 1943), Ph.D.
Associate Professor of Art — 6416 College Station

Louis Earl Swanson (1949), A.B.
Associate Professor of Hospital Administration and Assistant Superintendent of the Hospital — 2418 Wrightwood Avenue

Rebecca Swindell (1959), M.A.
Visiting Assistant Professor of Nursing — Y-4 Country Club Homes, Raleigh, N. C.

‡Wolfgang Taraba (1956), Ph.D.
Assistant Professor of German

Haywood Maurice Taylor (1930), Ph.D.
Professor of Toxicology and Associate Professor of Biochemistry — 2620 University Drive

Kenneth John Tharp (1953), B.S. in C.E.
Assistant Professor of Civil Engineering — 2610 Acadia Street

§Joseph Miller Thomas (1930), Ph.D.
Professor of Mathematics — 2215 Cranford Road

Walter Lee Thomas, Jr. (1932-35; 1937-42; 1945), M.D.
Professor of Obstetrics and Gynecology — 3615 Dover Road, Hope Valley

Edgar Tristram Thompson (1935), Ph.D.
Professor of Sociology — 138 Pinecrest Road

Alfred Tischendorf (1955), Ph.D.
Assistant Professor of History — 416 Carolina Circle

†Raymond P. Todd (1955), B.S.E.E., Colonel, U.S. Air Force
Professor of Air Science and Tactics

Elias Torre (1951), Doctor en Filosofía y Letras
Associate Professor of Romance Languages — 1121 Anderson Street

James Nardin Truesdale (1930), Ph.D.
Professor of Greek — 105 Pinecrest Road

* Resigned, January 31, 1959.
† Resigned, May 31, 1959.
‡ Resigned, August 31, 1959.
§ Absent on sabbatical leave, spring semester, 1959-60.

Herman Turk (1959), B.S. in E.E., Ph.D.
Assistant Professor of Medical Sociology in Department of Psychiatry and Assistant Professor of Sociology in Department of Sociology — 1216 Roosevelt Drive, Chapel Hill, N. C.

*Arlin Turner (1953), Ph.D.
Professor of English — 1514 Woodburn Road

Mrs. Violet Horner Turner (1943), M.D.
Assistant Professor of Obstetrics and Gynecology — 2106 Summit Road

Richard Lovejoy Tuthill (1953), Ed.D.
Professor in the Faculty of Arts and Sciences — 2709 Dogwood Road

Malcolm P. Tyor (1955), M.D.
Associate Professor of Medicine — 922 Green Street

Luella Jane Uhrhane (1947), R.N., M.P.H.
Associate Professor of Health Education — 206 Faculty Apartments

Charles Rowe Vail (1939), M.S. in E.E., Ph.D.
Professor of Electrical Engineering — 2730 Circle Drive

†Sheila Van der Horst (1958), Ph.D.
Visiting Professor of Economics

‡Richard W. Van Fossen (1956), Ph.D.
Instructor in English

Betty Joan Van Huben (1957), M.S.
Assistant Professor of Nursing — 2612 Roxboro Road

James Vander Zanden (1958), Ph.D.
Instructor in Sociology — 305 Monmouth Avenue

F. John Vernberg (1951), Ph.D.
Assistant Professor of Zoology — 803 Lancaster Street

John Verner (1958), M.D.
Associate in Medicine — 2401 Cranford Road

‡John Marcellus Vilas (1957), A.B., B.S. in E.E.
Instructor in Electrical Engineering

Patrick R. Vincent (1954), Ph.D.
Assistant Professor of Romance Languages — 1601 Bivins Street

Mrs. Christa von Roebel (1954), M.D.
Associate in Obstetrics and Gynecology — 2303 Pershing Street

Albert Edward Wackerman (1938), M.F.
Professor of Forest Utilization — 3610 Dover Road, Hope Valley

John P. Waggoner, Jr. (1957), B.S.
Assistant Professor in the Faculty of Arts and Sciences — 1017 Lakewood Avenue

Salih J. Wakil (1959), Ph.D.
Assistant Professor of Biochemistry — 889 Louise Circle

Hallam Walker (1955), Ph.D.
Assistant Professor of Romance Languages — 2716 Augusta Drive

John M. Wallace (1957), M.D.
Associate in Medicine — 1212 Virginia Avenue

Loring Baker Walton (1929), Lic. es L., Ph.D.
Professor of Romance Languages — 2235 Cranford Road

Calvin Lucian Ward (1952), Ph.D.
Assistant Professor of Zoology — K-3C University Apartments

Charles Eugene Ward (1927), Ph.D.
Professor of English — 2429 Perkins Road

§Seth L. Warner (1955), Ph.D.
Assistant Professor of Mathematics — 4188 Duke Station

* Absent on sabbatical leave, spring semester, 1959-60.
† Resigned, May 31, 1959.
‡ Resigned, August 31, 1959.
§ Absent on leave, 1959-60.

Raymond Waters (1959), B.S.
Instructor in Physical Education — 608 East Club Boulevard

Elizabeth Watling (1959), M.A.
Instructor in Nursing — Roxboro Road

George Archibald Watson, Jr. (1950), M.D.
Associate in Pediatrics — 4023 Bristol Road

Richard Lyness Watson, Jr. (1939), Ph.D.
Associate Professor of History — 109 Pinecrest Road

Vernon Elgin Way (1930), A.M.
Associate Professor of Greek — 918 Urban Avenue

*Wilfred Webb (1959), Ph.D.
Visiting Associate Professor of Political Science

Arnold M. Weissler (1959), M.D.
Associate in Medicine — Hillgrand Circle

Henry Weitz (1950), Ed.D.
Associate Professor of Education — 2716 Circle Drive

Paul Welsh (1948), Ph.D.
Associate Professor of Philosophy — 102 Faculty Apartments

Martha L. Wertz (1960), A.B., M.S.W.
Associate in Psychiatric Social Work — 832 Louise Circle

Donald L. Westfall (1957), M.A., Captain, U. S. Air Force
Assistant Professor of Air Science — 2110 North Duke Street

Joseph Cable Wetherby (1947), M.A.
Associate Professor of English — 2306 Prince Street

†Elbert Wethington (1958), Ph.D.
Visiting Lecturer in Christian Theology

Robert W. Wheat (1958), Ph.D.
Associate in Biochemistry — 2108 Summit Street

†Becky White (1957), Ph.D.
Assistant Professor of Education

Fred M. White (1959), M.F.
Instructor in Forestry and Forest Superintendent — Box 4144, Duke Station

J. Earl White (1959), M.D.
Associate in Medicine — 817 Lancaster Street

Mrs. Eugenia Remlin Whitridge (1947), Ph.D.
Assistant Professor of Sociology — Box 6935 College Station

Karl Milton Wilbur (1946), Ph.D.
Professor of Zoology — 2404 Bruton Road

Robert L. Wilbur (1957), Ph.D.
Assistant Professor of Botany — 1305 Carroll Street

Pelham Wilder, Jr. (1949), Ph.D.
Associate Professor of Chemistry — 2514 Wrightwood Avenue

Mrs. Hilda Pope Willett (1948), Ph.D.
Associate Professor of Bacteriology — 1953 Clark Avenue, Raleigh, N. C.

George Walton Williams (1957), Ph.D.
Assistant Professor of English — 619 Swift Avenue

James Wesley Williams (1937), A.B., B.S. in C.E., M.S.
Professor of Civil Engineering — South Lowell Road, Bahama, N. C.

‡Robert Marshall Williamson (1951), Ph.D.
Associate Professor of Physics — 20 Meadowbrook Drive

Neil L. Wilson (1957), Ph.D.
Assistant Professor of Philosophy — 201 Faculty Apartments

* Resigned, January 31, 1960.
† Resigned, May 31, 1959.
‡ Absent on sabbatical leave, 1959-60

Robert Renbert Wilson (1925), Ph.D.
Professor of Political Science — 717 Anderson Street

Ruby Wilson (1959), M.S.N.
Assistant Professor of Nursing — 2010 Chapel Hill Road

Thomas G. Wilson (1959), Sc.D.
Associate Professor of Electrical Engineering — 2413 Pickett Road

William R. Wilson (1959), B.D.
Instructor in Religion — Men's Graduate Center

Orval S. Wintermute (1958), B.D.
Instructor in Religion — 1103 North Duke Street

Loren Ralph Withers (1949), M.S.
Associate Professor of Music — 2741 Dogwood Road

Cecil H. Womble (1958), Ph.D.
Instructor in Latin — 1802 Sunset Boulevard

Barnes Woodhall (1937-43; 1945), M.D.
Professor of Neurosurgery — 4006 Dover Road, Hope Valley

Frank W. Woods (1958), Ph.D.
Assistant Professor of Silviculture — 1614 University Drive

Robert Hilliard Woody (1929), Ph.D.
Professor of History — 2734 Circle Drive

Alma Lorraine Woodyard (1954), M.A.
Assistant Professor of Physical Education — 8 Atlas Apartments

Boyd T. Worde (1958), M.D.
Assistant Professor of Radiology — 504 Carver Street

Mrs. Julia Ann Hedgepeth Wray (1955), M.F.A.
Instructor in Physical Education — 819 Demerius Street

*Dewitt Wright (1943), J.D.
Associate in Hospital Administration and Assistant Superintendent of the Hospital

Donald P. Wylie (1957), M.B.A., J.D.
Visiting Assistant Professor of Mathematics — 2602 Augusta Drive

James B. Wyngaarden (1956), M.D.
Associate Professor of Medicine and Biochemistry — 1106 West Knox Street

James O. Wynn (1959), M.D.
Associate in Medicine — Route 2, Chapel Hill, N. C.

William P. Yohe (1958), Ph.D.
Assistant Professor of Economics — 2203 Englewood Avenue

James G. Yoho (1957), Ph.D.
Associate Professor of Forest Economics — 2317 Huron Avenue

Charles R. Young (1954), Ph.D.
Assistant Professor of History — 124 Andrews Road

David Bruce Young (1956), B.S. in E.E.
Instructor in Electrical Engineering — 1927 Ward Street

Helen Rose Young (1957), M.S.
Assistant Professor of Nursing — A3A University Apartments

Paul Young (1956), M.A.
Professor in the Faculty of Arts and Sciences — 1110 Shepherd Street

W. Glenn Young (1954), M.D.
Associate Professor of Surgery — 1407 Dollar Avenue

H. I. Zankel (1956), M.D.
Associate in Rehabilitation and Chief of Physical Medicine and Rehabilitation at V.A. Hospital — 123 Newell Street

Karl Edward Zener (1928), Ph.D.
Professor of Psychology — 2727 Sparger Road

* Died, August 11, 1959.

PART-TIME INSTRUCTORS

Mrs. Jean B. Anderson, M.A.
English — 2400 Chapel Hill Road

James W. Applewhite, Jr., B.A.
Graduate Tutor in English — 1211 Ruffin Street

Ozer Arnas, B.S. in M.E.
Mechanical Engineering — 1417 James Street

Edward G. Bilpuch, Ph.D.
Physics and Research Associate — Box 674, Chapel Hill, N. C.

James Boatwright, III, M.A.
Graduate Tutor in English — 208 Buchanan Boulevard

Charles Bracken, M.A.
Education — 202 Erwin Apartments

Mrs. Anne Marie Bryan, Baccalauréat, Lic. en Droit, M.A.T.
Romance Languages — 1003 South Duke Street

Thomas Bullock, M.A.
Education — 607 Maple Avenue

Leslie F. Chard, II, M.A.
Graduate Tutor in English — Box 9257, Duke Station

Mrs. Barbara Cushman, B.M.
Aesthetics, Art and Music — 2022 Myrtle Drive

Agustin Diaz, B.S.
Mechanical Engineering — Route 2, Durham

John B. F. Dice, B.S.
Mathematics — 214 Swift Avenue

Henry Nathaniel Dorris, A.B.
Electrical Engineering — 434 Hyde Street, Burlington, N. C.

Neil R. Fletcher, B.S.
Physics — 2703 University Drive

William Jackson Galbraith, B.S.
Mathematics — 2802 Legion Avenue

Nick Galifianakis, A.B., LL.B.
Economics — 308 Mallard Avenue

Joseph M. Garrison, Jr., M.A.
Graduate Tutor in English — 943½ Morreene Road

William Frank Halloran, A.B.
Graduate Tutor in English — Box 5833, Duke Station

Henry Hargreaves, M.A.
Graduate Tutor in English — 1417 James Street

Arthur Bruce Hartung, A.B.
Mathematics — Rosemary Apartments, West Rosemary Street, Chapel Hill, N. C.

Martha E. Hester, M.A.
Graduate Tutor in English — 805½ Onslow Street

Reuben Columbus Hood, Jr., B.S.
Mathematics — 2018 Bivins Street

Norman Eugene Hoyle, M.A.
Graduate Tutor in English — 118 Pinecrest Road

Paul Joseph Hurley, M.A.
Graduate Tutor in English — F-5 Westover Park Apartments

Leonidas J. Jones, B.S. in E.E.
Electrical Engineering — Men's Graduate Center

Mrs. Carol Kaske, M.A.
English — 60 Maxwell Road, Glen Lennox, Chapel Hill, N. C.

George Eldridge Keeler, B.S.
Mathematics — 2116 Pershing Street

Allen J. Koppenhaver, M.A. *Graduate Tutor in English*	T-4 Piedmont Apartments
Arthur Zoltan Kovacs, A.B. *Physics*	Men's Graduate Center
Morton Lowengrub, M.S. *Mathematics*	602 Maplewood Avenue
George McCelvey, M.A. *Graduate Tutor in English*	2030 Englewood Avenue
Clayton Clifton Marcy, B.S. *Mathematics*	2404 Vesson Avenue
Percy Odell Massey *Physical Education*	Hillandale Road
Eugene S. Mauney, A.B., M.M. *Aesthetics, Art and Music*	% St. Stephens Episcopal Church Goldsboro, N. C.
Jehangir Farhad Mirza, B.E. *Civil Engineering*	703 Cleveland Street
Alexander William Molina, B.S. in C.E. *Civil Engineering*	506 West Knox Street
Thomas R. Nesbitt, Jr., B.S. in C.E. *Civil Engineering*	2726 Erwin Road
Billy Brown Olive, B.S. in E.E., LL.B. *Electrical Engineering*	Route 1, Piney Mt. Road
Freida Elaine Penninger, M.A. *Graduate Tutor in English*	503 Compton Place
Theo C. Pilkington, B.E.E. *Electrical Engineering*	1311 South Miami Boulevard
Armagan Sanver, B.S. in C.E. *Civil Engineering*	1417 James Street
Lee Sayre, B.A. *Graduate Tutor in English*	Box 4755, Duke Station
Wilfred Scholfield, M.A. *Botany*	No. 12, Duke University Apartments
Francis E. Skipp, M.A. *Graduate Tutor in English*	1506 Mason Drive
Richard Staley, A.M. *Romance Languages*	1000 Lamond Avenue
William Kenneth Stars, M.A. *Aesthetics, Art and Music*	1916 Glendale Avenue
Samuel Stell, M.A. *Education*	1819 South Miami Boulevard
Wilbur C. Stewart, B.S. in E.E. *Electrical Engineering*	Men's Graduate Center
Lawrence Robert Stires, Jr., A.M. *Romance Languages*	1212 Broad Street
Dewey M. Stowers, M.A. *Economics*	Box 193, Elon College, N. C.
Lucien Edward Wagnon, B.S. *Mathematics*	936 Lambeth Circle
LeGrand Joseph Weller, Jr., B.S. *Political Science*	Route 2, Farrington Road Chapel Hill, N. C.
Mrs. Carol Wetherby, M.A. *English*	2306 Prince Street
Mrs. Alice Wilkinson, M.S. *Aesthetics, Art, and Music*	1802 Hillcrest Drive

William R. Wisseman, Ph.D.
Physics — 915 Lambeth Circle

Robert Lee Zimmerman, M.A.
Graduate Tutor in English — 2202 Lafayette Street

Educational Administration

*Paul Magnus Gross, Ph.D.
Vice-President in the Division of Education — 3816 Dover Road, Hope Valley

Marcus Edwin Hobbs, Ph.D.
Dean of the University — 115 Pinecrest Road

Charles Eugene Ward, Ph.D.
Dean of Undergraduate Studies — 2429 Perkins Road

Richard Lovejoy Tuthill, Ed.D.
University Registrar — 2709 Dogwood Road

Roberta Florence Brinkley, Ph.D., LL.D.
Dean of the Woman's College — East Campus

Alan Krebs Manchester, Ph.D.
Dean of Trinity College and Assistant to the Vice-President in the Division of Education — 2016 Myrtle Drive

Walter James Seeley, E.E., M.S.
Dean of the College of Engineering — 1005 Urban Avenue

Robert B. Cox, A.M.
Dean of Undergraduate Men — 2319 Club Boulevard

Ellen Harris Huckabee, A.M.
Dean of Undergraduate Instruction, Woman's College — 618 Morehead Avenue

Marianna Duncan Jenkins, Ph.D.
Associate Dean of Undergraduate Instruction, Woman's College — 619 Morehead Avenue

Charles Buchanan Johnson, Ed.D.
Assistant Dean of Trinity College — 833 Morreene Road

Barney Lee Jones, B.D., Ph.D.
Assistant Dean of Trinity College — 2622 Pickett Road

Howard Austin Strobel, Ph.D.
Assistant Dean of Trinity College — 1510 Woodburn Road

Mary Grace Wilson, A.M.
Dean of Undergraduate Women — Faculty Apartments

Mrs. Frances M. Whitaker, M.A.
Assistant Dean of Undergraduate Women — 618 Morehead Avenue

William Lambreth Brinkley, Jr., A.B., M.P.S.
Associate Registrar — 2740 Dogwood Road

Clark R. Cahow, B.D.
Assistant Registrar — 1009 Green Street

Mrs. Elizabeth Anderson Persons, A.M.
Director of Admissions, Woman's College — 612 Swift Avenue

Everett Broadus Weatherspoon, A.B.
Director of Admissions, Trinity College and the College of Engineering — 125 Pinecrest Road

Nancy Lee Smith, A.B.
Admissions Counselor — 618 Morehead Avenue

Richard Marshall Ware, M.A.
Admissions Counselor — 650 Cranford Avenue

Margaret L. Coleman, A.M.
Central Records Supervisor — 918 Urban Avenue

* Resigned, March 23, 1960.

Mrs. Dorothy Holt McElduff, A.B.
Recorder, College of Engineering — 100 Forest Wood Drive

Louise Seabolt, A.M.
Recorder — 204 Faculty Apartments

Henry Weitz, Ed.D.
Director of the Bureau of Testing and Guidance — 2716 Circle Drive

Robert Merle Colver, Ed.D.
Assistant Director, Bureau of Testing and Guidance — 2720 Circle Drive

Allan Murray Cartter, Ph.D.
Dean of the Graduate School of Arts and Sciences — 1208 Dwire Place

Francis E. Bowman, Ph.D.
Assistant Dean and Director of Admissions, Graduate School of Arts and Sciences — 2114 Woodrow Street

Robert Earl Cushman, B.D., Ph.D.
Dean of the Divinity School — 2022 Myrtle Drive

Elwood Scott Harrar, Ph.D.
Dean of the School of Forestry — 2228 Cranford Road

Elvin Remus Latty, J.D., J.Sc.D.
Dean of the School of Law — 3620 Hathaway Road, Hope Valley

Wilburt Cornell Davison, D.Sc., M.D., LL.D.
Dean of the School of Medicine — Duke Hospital

Ann Madeline Jacobansky, R.N., B.S.N.E., M.Ed.
Dean of the School of Nursing — 880 Louise Circle

James T. Cleland, M.A., Th.D., D.D.
Dean of the Chapel — 2117 Myrtle Drive

*Paul Hibbert Clyde, Ph.D.
Director of the Summer Session — 1406 Woodburn Road

Olan L. Petty, Ph.D.
Acting Director of the Summer Session — 4505 Ryan Street

Cazlyn Green Bookhout, Ph.D.
Director of the Duke Marine Laboratory — 1307 Alabama Avenue

F. John Vernberg, Ph.D.
Assistant Director of the Duke Marine Laboratory — 803 Lancaster Street

Helen Mildred Kendall, A.B.
Administrative Assistant and Secretary of the Faculty, Divinity School — Faculty Apartments

Business Administration

Alfred Smith Brower, A.B.
Treasurer — 614 West Campus Drive

Gerhard Chester Henricksen, M.A., C.P.A.
Business Manager and Comptroller — 216 Forest Wood Drive

Edwin Constant Bryson, LL.B.
University Attorney — 818 Anderson Street

John M. Dozier, A.B.
Assistant Business Manager and Secretary of the University — 2510 Wrightwood Avenue

Stephen C. Harward, A.B., C.P.A.
Assistant Comptroller and Internal Auditor — 1614 Delaware Avenue

Henry Speck Morgan, A.B.
Bursar — 2705 Brighton Road

Ernest Lee Haywood, A.B.
Chief Accountant — 3512 Chapel Hill Road

* On leave, serving as Executive Secretary of the Long-Range Planning Committee, 1959-60.

Riley T. Smith
Supervisor, Tabulating Department — 2018 Wilson Street

Ralph Earle, Jr., B.S., Vice-Admiral, USN (Ret.)
Administrative Assistant — 2501 Perkins Road

R. Homer Bass, A.B., C.P.A.
Assistant Internal Auditor — 104 Newell Street

John Ellwood Doxey, A.M.
Purchasing Agent — 1004 Broad Street

Walter Glen Cooper, B.A.
Personnel Director — 2413 Prince Street

Theodore Warren Minah, B.S. in H.M.
Director of Dining Hall Operations — 2117 Club Boulevard

Mary Robinson, B.A., B.S.
Manager, the Dining Halls, Woman's College — 2729 Circle Drive

Elizabeth Marguerite Kaiser, B.A., M.S.
Manager, the Dining Halls, Men's Graduate Center — 921 Lambeth Circle

Jesse David Wellons, Jr.
Manager of Stores Operations — 2703 Augusta Drive

William Edward Whitford, A.B.
Director of Operation and Maintenance — 146 Pinecrest Road

William Kenneth Howard, B.S.
Maintenance Engineer — 106 Pinecrest Road

Henry Franklin Bowers, A.B.
Manager of Operations — 2505 Perkins Road

Carl A. Boy
Superintendent of Utilities — 2214 Erwin Road

John C. Gift
Superintendent of Building Maintenance — 811 Fifth Street

Public Relations

Charles Edward Jordan, A.B., LL.D.
Vice-President in the Division of Public Relations — 615 West Campus Drive

Robert L. Thompson, A.M.
Executive Secretary, University Scholarship Committee — 2618 Pickett Road

Clarence E. Whitefield, A.B.
Director, Bureau of Public Information — 800 East Forest Hills Boulevard

Norman Nelson, A.M.
Assistant Director, Bureau of Public Information — 1305 Carolina Avenue

William B. Strawn, A.B.
Staff Writer — 1800 Ruffin Street

Molly Cherry Taylor
Staff Writer — 2626 Charlotte Street

Glenn Edward Mann., A.B.
Director, Office of Athletic Information — Cole Mill Road

Fannie Yarbrough Mitchell
Director, Appointments Office — 16 Alastair Court

Alumni Affairs

Charles Aubrey Dukes, A.B.
Director — 1309 Oakland Avenue

Anne Garrard, A.M.
Assistant Director — 1411 North Duke Street

Roger L. Marshall, A.B.
Alumni Secretary; Editor, Alumni Register — Route 3, Hillsboro, N. C.

William Allen Tyree, A.B.
Field Secretary, Duke University Loyalty Fund — 610 Buchanan Boulevard

Charlotte Corbin, A.B.
Assistant to the Director — 403 West Chapel Hill Street

Fred W. Whitener, A.B.
Assistant to the Director — 1524 Woodburn Road

Patsy G. McKay, A.B.
Recorder — Route 2, Roxboro Road

Clark C. Cook, A.B.
Editorial Assistant — 2337 Glendale Avenue

Thad W. Sparks
University Photographer — 1308 Ruffin Street

Student Life

Herbert James Herring, M.A., LL.D.
Vice-President in the Division of Student Life — 2010 Myrtle Drive

Paul Robey Bryan, Ph.D.
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* Resigned, August 31, 1959

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* Resigned, June 30, 1959.
† Absent on leave, 1960-61.

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Herschel Amos Caldwell (1930)
Assistant Coach of Football — 3100 Devon Road, Hope Valley

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Robert Calvin Cox (1942), M.A.
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Associate Professor of Physical Education; Assistant Coach of Wrestling — 2722 Circle Drive

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Assistant to the Athletic Director — 2402 Wrightwood Avenue

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Assistant Coach of Football — 833 Louise Circle

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* Resigned, May, 31, 1959.
† Resigned, August 31, 1959.

Robert John Montfort (1940), B.A.
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* Resigned, January 31, 1959.
† Resigned, August 31, 1959.

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* Resigned, August 31, 1959.
† Deceased, September 6, 1959.
‡ Resigned, June 30, 1959.
§ Resigned, March 30, 1959.
¶ Resigned, December 31, 1959.

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UNDERGRADUATE INSTRUCTION

TRINITY COLLEGE

THE WOMAN'S COLLEGE

THE COLLEGE OF ENGINEERING

The University

Although Duke University as a corporate entity dates from 1924, its roots go back nearly a century and a quarter to the Union Institute, founded in 1838 in Randolph County. Dedicated to the erasing of ignorance and error and to the education of responsible citizens, the Institute grew slowly for a decade. In 1859 it was formally organized as Trinity College, which laid solid foundations for the future. When the college moved to the growing city of Durham in 1892, it was able to find increased support both from the Church and from individuals who were dedicated to the aims of liberal education. During the next three decades Trinity College drew to its faculty men of imagination, courage, and intellectual achievement who, in an atmosphere of academic freedom, created a notable liberal arts college.

The transition from college to university dates from James B. Duke's Indenture of Trust in 1924, through which Duke University came into being. The core of the new University was already in existence. This was Trinity College, which was joined in the ensuing years by three other undergraduate colleges, the Woman's College in 1925, the College of Engineering in 1939, and the School of Nursing in 1953. In the meantime, a number of professional schools were established as part of the total University structure. In hardly more than a generation Duke University was to attain a position of educational leadership and importance, both regionally and nationally, which remains one of the remarkable stories in American higher education.

The undergraduate colleges exist as important parts of the University, which by modern standards is moderate in size: they enroll about 3500 students in the total population of about 5800. Though they share the same campuses with the professional schools and many of the same facilities, and participate in the wide range of activities and educational advantages possible in a university environment, each of the colleges has its separate identity; yet each is related to the others and to the University as a whole.

From college to university the basic principles have remained constant. The University motto, *Eruditio et Religio*, reflects a fundamental faith in the union of knowledge and religion, the advancement of learning, the defense of scholarship, the love of freedom and truth, a spirit of tolerance, and a rendering of the greatest service to the individual, the state, the nation, and the church. Through changing

generations of students the objective has been to encourage each individual to achieve to the extent of his capacities an understanding and appreciation of the world in which he lives, his relationship to it, his opportunities, and his responsibilities.

The undergraduate colleges of Duke University are concerned with developing the whole person. In classrooms, libraries, and laboratories they are concerned with his mental and moral development, in gymnasiums and on playing fields, with his physical growth, and in the Chapel and religious program, with his spiritual well being. Although the University has always been closely associated with the Methodist Church, it welcomes students of all faiths and encourages them to develop their spiritual lives in accordance with the tenets of their own creeds. The need of training for specialized professions and employments is recognized, but such training is incidental to a larger purpose. Through the variety of the subject matter, the insistence on a common core of fundamental courses, and an emphasis on a more intensive study of some selected subject, the colleges seek to give their students a knowledge and appreciation of world culture and at the same time to provide a foundation for careers in business and the professions.

Location

Duke University is situated in Durham, North Carolina, a city of about 85,000 population, 250 miles southwest of Washington, D. C., and 400 miles northeast of Atlanta, Georgia. From Washington, New York, and New England it may easily be reached by overnight trains of the Southern Railroad, or by air travel via Eastern Air Lines and Capital Air Lines. From the south and southwest both train and air services are available and frequent. From the Ohio Valley and the middle west frequent direct air travel is available via Eastern Air Lines from Chicago, Detroit, Cleveland, and via Piedmont Air Lines from Cincinnati, Louisville. By motor, Durham may be easily and pleasantly reached by a varied network of Federal and state highways, chiefly U. S. 15, 501, and 70, and by the new Interstate Highway 85.

The University is located on a tract of nearly 8,000 acres of rolling, wooded land on the southwest fringe of the city. The Woman's College is a mile and a half distant, within the city, on its own campus of 110 acres.

The Faculty

It is the policy of the University to secure and to maintain a faculty of high competence in both teaching ability and research activity.

In times of such rapid and far-reaching changes as we live in, teachers must ever be aware of new ideas, new climates of thought, new discoveries, whether they be in the sciences, in literature, or in philosophy. Their interest in and capacity for original investigation and their contribution to the ever-developing body of human knowledge help to bring to life the materials which they teach and to communicate to the college student both the excitement and the essential significance and value of learning. This double function of the scholar-teacher tends to ensure the broadest and deepest experience available to students. In general all ranks in the instructional staff are assigned to the beginning as well as to advanced students, so that Freshman students are taught by many of the most competent teachers and most experienced scholars.

Beyond the physical limits of the classroom many opportunities exist for those students who wish and can utilize, for their own educational purposes, informal and friendly relationships with faculty members. These may be established through the regular advisory system, through extracurricular informal discussion groups, through identity of interests.

Admission to the Colleges



New students are admitted for the academic year at the opening of school in the fall. Only a very small number can be considered for admission in February.

Priority of application is not a factor in selection, but application early in the student's senior year of high school is desirable. Since all supporting, required documents for admission must be reviewed before final decisions can be made, it is necessary for the applicant to make certain that his credentials are complete by March 1. After this date the Committee on Admissions makes its selections; their decisions with respect to male applicants for Trinity College and the College of Engineering will be forwarded as soon as made. Candidates for admission to the Woman's College will be notified of decisions between April 15 and May 1.

The size of the entering classes is approximately as follows: Trinity, 550; College of Engineering, 175; Woman's College, 340; the School of Nursing, 95. Since about five thousand candidates normally apply, selection must be made on a competitive basis and upon a

number of criteria. These include the quality of the transcript of official grades in the secondary school, rank in the graduating class, statement of school officials, the level of scores of the Scholastic Aptitude Test of the College Entrance Examination Board, the applicant's personal statement of his aims in college, the record of his extra-curricular interests and achievements.

Every applicant is required to take, not later than January of his senior year in secondary school, the Scholastic Aptitude Test of the College Entrance Examination Board. While the submission of scores on *achievement tests* of the College Entrance Examination Board is not required, an applicant should submit them if he has arranged to take such tests for other purposes. Although these are not a determining factor in the final decision of the Committee on Admissions, they provide added data upon which an even more careful decision can be based. Therefore, it is recommended that they be submitted.

Although there are no inflexible subject matter requirements, at least fifteen acceptable units of secondary school credit must be presented. Of these at least twelve must be in college preparatory subjects: English, foreign language, history and social studies, mathematics, and physical or biological sciences. Applicants for the College of Engineering are advised to present four units of mathematics and at least one unit in physics or chemistry.

Prospective students are urged to broaden their reading outside of class during their senior year and to make the acquaintance of books and magazines that do not form part of the subject matter of their courses. At the same time, they should take every opportunity to increase their competence in writing. Those who cannot write simple, clear, grammatical English prose will be progressively at a serious disadvantage in the competition for admission and also in the general work of the Freshman year. Careful attention to correctness in English in correspondence and on application blanks cannot be too seriously stressed for candidates for admission.

Application forms and instructions regarding procedure and necessary documents to be included will be sent upon request to the Registrar, Duke University, Durham, North Carolina. A non-refundable processing fee of $10.00 must accompany the submission of the full application form.

Admission to Advanced Standing

Admission by transfer from other institutions may be arranged for a limited number of students, under certain well-defined regulations. All such candidates must submit official transcripts of all work completed at other schools, accompanied by a statement of honorable

dismissal, and scores on the Scholastic Aptitude Test of the College Entrance Examination Board. An overall grade average of at least C must have been earned on work previously completed; courses on which a grade less than C has been earned cannot be accepted for transfer credit. Normally students should not apply for transfer beyond admission to the junior class, for the values in education which they envisage in the desire to transfer to Duke can not be realized within one year. Further detailed regulations for admission by transfer may be obtained from the Registrar.

A small number of special students of mature age may be admitted for such courses of instruction as their earlier training and experience may qualify them to take. They may not be accepted, however, as candidates for a degree in a regular course unless they are able to meet all normal requirements for admission which apply to all beginning students.

Former students who have for various reasons withdrawn from college and who wish to continue their collegiate careers should apply to the Registrar, with a detailed account of their activities since withdrawal from college.

Advanced Placement and Credit

In order to recognize superior preparation of entering students and to provide flexibility in the freshman program of studies, the colleges have for many years given placement tests during Orientation Week. On the basis of the student's performance on these tests, he is assigned to sections in certain departments which are expected to do work consonant with his demonstrated achievement or his potential ability in the subject matter. Placement in advanced sections allows the able student to omit certain preliminary courses and to take work for which his interests and aptitudes fit him. While no credit toward graduation is given him for the course or courses omitted, he is able to broaden the base of his elective courses in subsequent years of his college experience.

Advanced Placement course credit is, however, possible for those students who have taken, in secondary school, an advanced placement course, and have taken in May of the senior year the regularly scheduled Advanced Placement Program tests administered by the College Entrance Examination Board. Upon submission of these results, evaluations are made by the subject matter departments and by the appropriate deans. If the quality of the tests is acceptable, recommendation for course credit may be made for one or two semesters in each subject area represented by the Advanced Placement Program scores.

The colleges are alert to identify the superior student at the beginning of his college career and to encourage him to realize his intellectual potentialities. To this end the colleges provide certain programs, in addition to advanced placement and advanced placement credit. Although every freshman is included in an advisory program, a special advisory group has been created, to which are invited a number of the entering class. These students are assigned Faculty Advisors whose intellectual and academic interests are congenial to those of the student. By individual counseling, some students are assigned to special restricted seminar groups, and some others are urged to undertake (under the guidance of individual faculty members) independent reading and study programs which permit them to omit certain introductory courses and to proceed to more comprehensive courses, upon a demonstration of their readiness.

The Course of Study

Undergraduates at Duke may pursue a course of study leading to one of the following degrees: Bachelor of Arts (A.B.), Bachelor of Science (B.S.), Bachelor of Science in Civil, Electrical, or Mechanical Engineering (B.S. in C.E., B.S. in E.E., B.S. in M.E.), and Bachelor of Science in Nursing

The curriculum of the undergraduate colleges has undergone numerous changes in the course of years in order to meet the challenges of new conditions and to provide flexibility for a student body that changes in aptitudes and achievement over a long span of time. Yet the essential purposes and aims of the liberal arts college have remained the same: to offer a program, with breadth and depth in each subject-matter discipline, to enable a student to establish foundations upon which he can develop a sound philosophy of living and build a satisfying, productive career.

Many students entering college feel sure that they wish to prepare for certain professions and are eager to find "practical" courses that will point toward those professions or occupations, only to discover after a year that they have lost early interests in favor of others that appear more congenial to their aptitudes. Other students enter with only vague notions of a future career. A liberal arts course well serves all of these students, especially in the beginning years. Students entering the College of Engineering have already chosen their profession, of course, and are directly involved in professional training; yet so important in their future is the liberal arts curriculum deemed that a very considerable portion of their course is devoted to those subjects which are available to or required of the liberal arts students.

In order to achieve both breadth and depth in his program, the student is required to meet certain general graduation requirements before he chooses a special field of concentration. The freshman, for example, will take English 1-2, a foreign language, a laboratory natural science, mathematics (in most instances), history or religion, one elective course (which may be economics, political science, philosophy, history, and so on), and physical education. The engineer, however, takes a slightly modified, standard course: engineering drawing, English, history, mathematics, physics, and physical education.

In the sophomore year the student continues his study of foreign language, and chooses those courses in the several departments that enable him to complete the general basic requirements for graduation. In addition to these he has available to him elective courses which serve to give him a broad distribution in the areas of the humanities, social sciences, and natural sciences. By the end of the sophomore year he is expected to declare his major field of concentration. The last two years of his college program are devoted to a deepening study in his field of concentration, along with related work that should be chosen so as to provide an integrated program of study.

The student of nursing likewise takes a modified program which includes English, history, political science or religion or an elective in music, art, or philosophy, zoology, chemistry, psychology, microbiology, nursing, and physical education.

The prescribed work in breadth during the first two years of study is designed to acquaint the student with those fields of thought which are relevant to him as individual and as citizen. The work in depth during the last two years is designed to offer him the opportunity to achieve a mastery of a limited subject and to lay a groundwork for his future career.

JUNIOR YEAR ABROAD: With the approval of the dean of the college concerned, students may be permitted to take their junior year abroad under the auspices of an approved group or at an acceptable accredited institution. Courses to be taken must be approved by the dean before the venture is undertaken.

Student Life and Services

The Libraries

TO SUPPORT a rich educational experience in a world of rapid and far-reaching change, great library collections are essential. Undergraduate students at Duke are fortunate to have available exceptional resources. The University library, among the first fifteen university libraries in the country, contains 1,390,540 volumes and 2,722,087 manuscripts. About 50,000 volumes are added annually. Separate departmental and professional school libraries provide notable collections in the several disciplines.

The Woman's College library, with its own attractive Georgian building, contains 121,220 volumes in an open stack collection, chiefly those books most constantly in use in the undergraduate curricula. But the larger collections of the main and specialized libraries are at hand when needed.

More detailed information may be obtained in a "Student's Guide to the General Library," available on request to the Librarian of the University.

Residence Halls

Since the undergraduate colleges of the University are resident institutions, all students are required to live in the residence halls. On the West Campus, Craven, Crowell, Few, and Kilgo Quadrangles, and Wannamaker Hall are occupied by undergraduate men. The quadrangles contain numerous houses which provide rooms for double and single occupancy. Kilgo and Crowell are reserved for members of the freshman classes of Trinity College and the College of Engineering. All freshman residence houses have a Housemaster and an assistant Housemaster residing in them.

On the Woman's Campus, the ten residence houses are alike in organization: each has a Counselor, a member of the Dean's staff, who lives in the house and serves as adviser; each house provides space for full representation from all four classes, approximately thirty places in each being reserved for freshmen. Nine of the houses—Alspaugh, Southgate, Bassett, Brown, Giles, Pegram, Aycock, Gilbert, and Addoms—have both single and double rooms; Jarvis has only double rooms.

Detailed information with regard to the student's obligations under the housing contract is sent by the Housing Bureau to each student upon his admission to the college.

Medical Care

The Student Health Program is closely related to the Teaching Hospital of the Duke University Medical Center. This arrangement provides an unusually comprehensive service, available at all times. The cost, for regularly enrolled students, is included in the general fee paid each semester, and in the fees charged each student in the summer quarter.

The Service is under the direction of the University Physician with the cooperation of the Staff. It includes hospitalization in Duke Hospital, as deemed necessary by the Hospital Staff, but limited to thirty days; medical and surgical care under the supervision of a senior physician or surgeon; drugs, X-ray work, and ward nursing. Special nursing is not covered. Students pay for board while in the hospital. Refraction of eyes, treatment of teeth and of all chronic and pre-existing conditions, such as diseased tonsils, hernias, pilonidal cysts and other elective surgery, chronic skin conditions, endocrine disturbances, etc. are not included. The cost of any necessary braces and orthopaedic appliances, as well as of special nursing, must be borne by the students, and blood used for transfusions must be paid for or replaced.

If students have insurance providing hospitalization, surgical, or medical benefits, the benefits shall be applied to the cost of their medical care. Accidents or illnesses occurring during vacations or while off the campus, are not included in this service. A special commercial policy available only to regularly enrolled Duke students furnishes complementary protection, if desired.

Advisory consultation with a psychiatrist at no expense is available to students through referral either by the Student Health Physicians or by the Deans, but office visits for psychotherapeutic interviews cannot be included in this service.

A woman physician is in charge and a nurse in constant attendance at the Woman's College Infirmary. Women students receive ambulant care at regular office hours and patients in this Infirmary can be transferred to the Duke Hospital at any hour of the day or night. Male students receive ambulant care at the Student Health Office in the hospital during regular office hours. The emergency service and the specialist consulting services of the Hospital and Medical School are always available.

Students are given a careful physical examination upon arrival at the University. Every applicant should be re-vaccinated against smallpox within three years before admission to the University. It is urgently advised that the standard Salk vaccine routine for poliomyelitis be completed by all students and that all male undergraduates be actively immunized to tetanus by injections of toxoid.

Simple directions for procedure in reporting the student's need for medical care are contained in the Student Handbook supplied to each student upon entering.

Special Services

Other services of many kinds are available to all undergraduate students. Among these may be cited the Bureau of Testing and Guidance, which provides a centralized program of educational, personal, and vocational counseling, and the Appointments Office, which assists undergraduates in their search both for summer employment and for post-graduation careers.

Physical Education

Students of Trinity College and the College of Engineering who have no inhibitory physical handicap must register for and enroll in a physical education class each of four semesters. The first two of these four consist of prescribed activities designed to improve body control and growth and development through big muscle exercise; the last two semesters may be devoted to activity of the individual's choice from a number of sports generally of a recreational nature such as badminton, basketball, golf, handball, swimming, tennis, and volleyball. A total of four semester hours credit toward graduation and quality points according to the marks assigned are awarded for these activities. In instances where the University Health Service examination indicates specific types of activity may be beneficial, a modified program is available as medically prescribed. Normal credit is awarded for participation in the modified program.

In addition to the four semesters of required physical education, each student may voluntarily participate in the intramural program, which embraces a dozen sports and attracts a large percentage of the student body. In a typical year more than 3,000 students forming fraternity, dormitory, and organizational teams, participate in seventeen tournaments and compete for more than fifty trophies. An ideal sequence of events would visualize each student learning physical skills in the required physical education program, practicing these skills in the intramural program, and applying them as a squad member in the intercollegiate sports program.

For each semester of undergraduate matriculation, the individual student is issued a uniform appropriate for the season and the activity in which he is engaging. The uniform is issued, exchanged, laundered, and maintained at no additional expense to the student.

The program of the Physical Education Department of the Woman's College is designed to give the students of that college an appreciation of the value of activity for general physical well-being, skill in one or more activities which can be enjoyed as recreation during and after college, a well-developed and well-coordinated body, and a knowledge of good posture and efficient handling of the body in everyday activities. To this end, students are allowed to choose from a large number of activities, including individual, dual and team sports, swimming, and several types of dancing. Each student during her two years of required physical education must elect one course in dance. Those students who are unable to pass the swimming test must take one course in swimming before graduation. At the mid-point in the fall semester of the freshman year the activity course ends, and all freshmen take two periods a week of fundamental movement and one of social hygiene for the remainder of the semester.

The Dance Group, the Swimming Club, and the other sports clubs of the Woman's Recreation Association give opportunities for each student to take part in the types of intramural activities most interesting to her. The swimming pool, tennis courts, bowling alleys, and other athletic equipment are available to all students for use at specified times.

In order to maintain certain hygienic standards of physical education and intramural athletics, the University has made available for all students, in addition to facilities for physical activity and recreation, the following equipment and services:

1. Gym suit, dance leotard, bathing suit, warm-up suit.
2. Provision for locker and handling of uniform.
3. The laundering of uniform and towel as needed.

Intercollegiate Athletics

The intercollegiate athletic program is controlled entirely by the University through the Athletic Council composed of seven members from the faculty, administration, and alumni groups. Representative freshman and varsity teams are trained in football, basketball, baseball, track, cross country, golf, soccer, lacrosse, swimming, tennis, and wrestling. Schedules are arranged to include both the schools in the Atlantic Coast Conference, of which the University is a member, and others in the South, North, East, and Middle West. Football and basketball are always the most popular spectator sports. The less popular sports, however, have their devoted followers, and over the years many excellent teams have represented the school, and athletes of note have been developed.

Social and Cultural Organizations

The Duke Student Union has as its stated purpose, "to stimulate, promote, and develop the social, recreational, cultural, educational and spiritual activities of the students of Duke University." This purpose is carried out through a broad program of social and cultural recreation adapted to the leisure time interests and needs of all undergraduate students, who are members of the organization. The Union Building, located on the West Campus, is the student center. In one section the alumni offices, dining facilities, University Store, grill, soda fountain, post office, barber shop, bank, and ball room are housed. In the other there are student organization offices; meeting rooms; information center; music, television, reading, and Town Boys' Lounge; and a recreational area. Similar service and activities areas for the Woman's College are provided on that campus.

The more than one hundred separate student organizations in the colleges fall primarily into seven broad areas. They are service, professional and honorary, communications, musical, dramatic, religious, and general interest. In the service group are found such activities as the Campus Chest, Student Government, Pan-Hellenic and Interfraternity Councils, the Student Union, and YMCA-YWCA groups. The Professional and Honorary organizations are numerous and include traditional Greek letter societies, such as Phi Beta Kappa, as well as national and local academic and leadership groups. The *Duke Chronicle*, the campus newspaper, is published three times each week, and the student radio station, WDBS, operates daily. Three magazines are published by students, as is a comprehensive yearbook. Student publications are under the control of the Publications Board, composed of six members from the University staff appointed by the President; six men from the junior and senior classes, elected by the students in Trinity College and the College of Engineering; four women from the junior and senior class, elected by the students in the Woman's College; and one from the junior and senior classes, elected by the students in the School of Nursing; and four editors and four managers of student publications, *ex officio* members without voting power. No student publication can be established at the University without the approval of the Board. The musical groups are strong. Included are the Chapel Choir, Symphony Orchestra, Concert Band, Glee Clubs, and several other smaller groups are strong. Included are the Chapel Choir, Symphony number of plays and readings each season. The Hoof 'n' Horn group annually produces a musical comedy which is written, cast, directed, and acted by students from the three colleges.

Other campus groups are strictly social in nature. These organizations sponsor dances, chaperoned cabin parties, concerts, and in-

formal discussion groups. Social functions are frequent enough to afford the relaxation needed from work required in classroom and laboratory.

Approximately half of the undergraduate students belong to fraternities or sororities. There are no chapter houses, but the program of fraternity and sorority activity is carried on within the sections of the regular dormitories or buildings set aside for this purpose. Nineteen national social fraternities and thirteen national sororities have chapters on the campus.

Religious Life

"Eruditio et Religio," the motto emblazoned on the seal of the University, proclaims belief in the essential union of knowledge and religion in the educational process. The Gothic Chapel stands at the center of the campus, an inspiring symbol of the place of religion in the well-balanced life. The Chapel encourages the cultivation of the spiritual and moral life of students through their participation in a program of varied activities.

The Dean of the Chapel, in his official position, seeks to interpret the place of religion in culture and society as it bears upon the academic life. Intramurally, he acts as a liaison officer among the colleges and the graduate and professional schools in religious matters pertaining to their interests. At the University Service of Worship, he preaches, officiates at the lectern, and celebrates the Sacraments. He serves, extramurally, as an ambassador-at-large representing the University, nationally and internationally in ecumenical matters.

In the Service of Worship on Sunday morning two hundred students participate by singing in the choir; at least one hundred other students aid in special ways, as ushers, collectors, and assistants at communion services.

The Chapel also encourages the students to translate their worship into effective Christian living. A rich program of activities is offered to challenge their interests and meet their needs. These activities are developed along three lines: interfaith, interdenominational, and denominational. Protestant, Jewish, and Roman Catholic students are organized in their respective groups with their denominational chaplains and their advisers.

The University Religious Council under the supervision of the Chaplain to the University, who is also Director of Religious Life, and his associates, coordinate the work of the Council and the denominational groups to promote a vital, religious experience.

Special organ and carillon recitals and other musical services are given from time to time in the Chapel.

Reserve Officers Training Corps

Through the Naval and Air Force Reserve Officers Training program the University is cooperating with the Department of Defense in the effort to provide a steady supply of well-educated officers for the active and reserve forces of the Nation.

The Summer Session

THE SUMMER SESSION at Duke University makes available to Duke undergraduate students and to undergraduates from other universities and colleges a notable program of instruction in many fields of knowledge both academic and professional.

Undergraduates in Duke University who desire to accelerate their programs may complete the work for a degree in three years by attending two and one-half summer sessions.

Undergraduates from other colleges and universities may enjoy the special advantages of summer instruction at Duke and transfer their earned credits to their own institutions.

The Summer Session of 1960, will include two terms: Term I, June 10 to July 15; Term II, July 16 to August 20. By attending both terms it is possible for a student to earn as many as twelve semester hours of credit.

Instruction of interest to undergraduates will be offered in the summer of 1960 in the following departments and colleges: Botany; Chemistry; Economics; Education; Nursing; Engineering; English; Forestry; French; Geology; German; Greek; Health and Physical Education; History; Latin and Roman Studies; Mathematics; Philosophy; Physics; Political Science; Psychology; Religion; Sociology; Spanish; and Zoology.

Distinctive features of Summer Session instruction are provided by the program in marine biology offered at the Duke Marine Laboratory, Beaufort, North Carolina, and by various conferences in several of the Departments.

While the basic purpose of the Summer Session is to serve the academic and the professional requirements of those who are interested in their own educational advancement, the University recognizes the need of, and provides for, a varied recreation program both athletic and social.

Undergraduates of Duke University, both men and women, who plan to attend the Summer Session should enroll with the Dean of their own college in Duke University. Undergraduates in other universities or colleges who seek transfer credits should apply directly to the Director of the Summer Session, Duke University, Durham, North Carolina.

Financial Information

THE prospective student who seeks the optimum opportunity in higher education will not be a bargain hunter. Certainly, some sound plan for paying the cost of college must be devised, but this plan should be formulated after the thoughtful selection of an institution has been made. No college or university can honestly say that an education at the college level is inexpensive. Most university people and the ever growing college alumni families across our nation will, however, reflect the feeling that the benefits derived from a college education constitute a handsome return on the dollars invested.

Each student going to college should analyze carefully his financial situation. In making such an analysis it should be recognized that the primary responsibility for defraying the cost of an education lies with the student and his family. The typical college student can depend upon some contribution from his family's current income, a proportionate share of family savings, and anticipated income from summer employment. The number of years of study contemplated and the number of dependent children in the family should be considered in computing the funds which will be available in a particular year.

Fees paid by the students cover only a part of the cost of their instruction and of the operations of the University. Income from endowment and contributions from the alumni, alumnae, and other public-spirited men and women meet the balance, which constitutes more than half the total cost.

ESTIMATED EXPENSES FOR AN ACADEMIC YEAR

Certain basic expenditures are to be considered in preparing a student's budget, such as tuition, the general fee, room and board. Incidental expenses, clothing, and travel depend to a large extent upon the tastes and habits of the individual. The estimated necessary expenditures are shown as follows:

	Undergraduate Men		*Undergraduate Women*	
Tuition	$ 850.00		$ 850.00	
General Fee	150.00		150.00	
Room Rent	200.00		225.00	
Board	500.00	(Cafeteria estimate)	450.00	(Board rate)
Laundry	75.00		75.00	
Books	50.00		50.00	
TOTALS	$1,825.00		$1,800.00	

It is realistic to suggest that the average Duke student will spend at least $175.00 annually for incidental items, including sundry clothing purchases and organizational dues. Travel costs and major expenditures would have to be added to these estimates.

Tuition and Fees

The tuition of $425.00 and the general fee of $75.00 are due and payable not later than the day of registration for a particular semester. After the day of registration no refund of the tuition or the general fee will be made except for involuntary withdrawal to enter the armed services.

New students, on notification of acceptance, are required to pay a non-refundable first registration fee of $20.00 and to make a deposit of $50.00. The $50.00 deposit will not be refunded to accepted applicants who fail to matriculate. For those who do matriculate, $25.00 of the deposit serves as a continuing room deposit for successive semesters, and the remaining $25.00 as a continuing registration deposit. Arrangements for refund of the $25.00 room deposit are described in information furnished each resident student by the Housing Bureau. The $25.00 pre-registration deposit will be refunded to students (1) whom the University does not permit to return, (2) who graduate, or (3) who request the refund at the time of pre-registration, thus indicating their intention not to return for the following semester. The pre-registration deposit will not be refunded to students who pre-register and fail to enter the following semester on schedule.

Students who have been re-admitted to the University after an absence of one or more semesters, on notification of readmission, are required to make the $50.00 room-rent pre-registration deposit.

An Air Force ROTC deposit of $20.00 is required of students enrolling in Air Science to cover possible loss of military equipment issued to them. This deposit is refunded to the student upon return of issued equipment.

Living Accommodations

Undergraduate students are required to live in the residence houses unless they are married or are living with parents or relatives. Any exception must be approved by the Dean. Rooms are rented for a period of not less than one semester. No refund will be made except for involuntary withdrawal to enter the armed services. Such refunds will be made in accordance with the University's established schedule.

In the residence houses for undergraduate men the rental charge for a single room is $250.00 for the academic year or $125.00 for each semester. The rental charge for a double room is $400.00 for the academic year or $200.00 for each occupant, or $100.00 per semester for each occupant.

In the residence houses for undergraduate women, the rental charge for a single room is $275.00 for the academic year or $137.50 for each semester. The rental charge for a double room is $450.00 for the academic year or $225.00 for each occupant, or $112.50 per semester for each occupant.

Regulations governing the occupancy of rooms will be supplied directly from the Housing Bureau when the reservations are made. Occupants are expected to abide by these regulations.

The dining facilities on the West Campus include three cafeterias with multiple-choice menus, and the Oak Room, where full meals and *a la carte* items are served. The cost for the academic year ranges from $450.00 upward depending on the tastes of the individual.

On the Woman's College Campus, dining halls are located in the Woman's College Union and in Gilbert-Addoms residence hall. Resident women will board in these halls. The charge for board is $225.00 per semester, payable at the time of registration.

Because of the large number served in the dining halls, it is not possible to arrange special diets for individual students.

Other Information

In the regular academic year students who register for no more than two courses with a maximum credit of 8 semester hours are classified as special students. They are charged a registration fee of $5.00 for each course and $28.50 for each semester hour of course credit. Registration for 9 or more semester hours, or 3 or more courses, requires payment of full fees.

Auditing of one or more courses without charge is allowed students paying full fees, provided that the consent of the instructor is obtained. Students who are enrolled for not less than 3 nor more than 8 semester hours may audit other courses by payment of $10.00 for each course audited. In order to encourage its employees in their professional and personal advancement, Duke University will permit full-time employees that are paid on a monthly basis to take one or two courses, but not more than seven semester hours and will charge $5.00 per course plus $12.50 per semester hour. Auditors submit no daily work, take no examinations, and receive no credit for courses audited.

One transcript is issued free of charge. Additional copies are supplied at $1.00 each.

No records are released and no student is considered by the faculty as a candidate for graduation until he has settled with the Treasurer for all indebtedness.

Bills may be sent to parents or guardians provided the Treasurer has been requested in writing to do so. Failure to pay bills on or before the due dates will debar the student from class attendance until the account is settled in full.

Student Aid

Duke University is interested in students with ability and ambition. It is the aim of the University Scholarship Committee and others affiliated with the Student Aid Program to provide, insofar as possible, the financial assistance required by students accepted for entrance who are unable to defray the cost of college from their own resources. The assistance is made available in the form of scholarships, loans, and part-time jobs.

In 1959-60 student aid totalled approximately $910,000 allotted to 897 students. Of this amount $550,000 was granted in scholarships, and $160,000 in student loans. The remainder was earned through part-time employment.

Freshman students shared proportionately in this aid: 412 received scholarships totalling $221,000.00.

SCHOLARSHIPS: All requests for applications for scholarships, grants-in-aid, industry scholarships or remissions of tuition should be addressed to the Office of Admissions, Duke University, Durham, North Carolina.

All candidates for scholarships and grants-in-aid must complete an official Application for Admission to the University and must forward the Application for Scholarship to the Student Aid Office, 217 Allen Building. Scholarship candidates who desire to be considered for the maximum value of scholarships on the basis of financial need are required to complete the "Parents' Confidential Statement" of the College Scholarship Service. The "Parents' Confidential Statement" may be obtained from high school principals or upon request from the Student Aid Office.

Scholarship candidates should initiate their applications during the fall semester of their senior year of study in secondary schools. Instructions concerning the specific requirements and deadline dates will accompany the application materials sent to applicants for scholarships and grants-in-aid.

All candidates for scholarships or grants-in-aid are required to take the Scholastic Aptitude Test of the College Entrance Examination Board. This test must be taken in either December or January in the senior year of secondary school study.

Details relative to scholarship prizes, industry scholarships, remissions of tuition, athletic awards, and scholarship grants are given in the *Bulletin of Undergraduate Instruction*.

STUDENT LOANS: Loans covering tuition and other expenses are available to students who have completed at least one semester in residence and whose records have been satisfactory. Loans generally mature after borrowers have left the Univesity. Loan interest on long term loans accrues at the rate of 1% from the date of each note. After a student has left the University permanently, the loans begin bearing interest at the rate of 3% per annum to continue for the following five-year required payment period.

In addition to local loan funds, Duke University participates in the student loan program established under the provisions of the National Defense Education Act of 1958. The attractive terms offered to students under the National Defense Education Act offer a practical solution to students who need assistance to defray college costs.

The Student Loan Committee in approving loan selects those students who, from the standpoint of character, scholastic attainment, personality and degree of financial need, are deserving of this consideration. All applications for loans should be made to the Executive Secretary, University Scholarship Committee.

STUDENT EMPLOYMENT: Student employment offices are maintained to serve students who need part-time jobs. There are many opportunities both on the campus and in the city of Durham, and a considerable number of students each year help defray their college expenses by working.

Students may apply for part-time employment after they have received official notification of acceptance from the Office of Admissions. Such requests for employment should be made by letter prior to the date of entrance.

Those students in Trinity College and the College of Engineering in need of part-time employment should apply to the Student Aid Office, 217 Allen Building, Duke University, Durham, North Carolina. Students in the Woman's College should apply to the Assistant Dean of Undergraduate Women, 108 East Duke Building, Duke University, Durham, North Carolina.

Medals and Prizes



THE achievements of undergraduate students are recognized in various fields of college activity. The following prizes suggest the range of the recognition:

The *Debate Council* authorizes the awarding of medals to members of the graduating class who have represented the University in at least two intercollegiate debates. The medals are given by the local chapter of the Tau Kappa Alpha Fraternity.

The Robert E. Lee Prize is the gift of The Reverend A. W. Plyler, of the class of 1892, and Mrs. Plyler. The sum of $50 is awarded annually at Commencement, preferably to that member of the senior class of Trinity College or the College of Engineering who, in character and conduct, in scholarship and athletic achievement, in manly virtues and capacity for leadership, has most nearly realized the standards of the ideal student. The Vice President in the Division of Student Life, the Graduate Manager of Athletics, and the President of the Student Council constitute a committee to draft and adopt regulations governing the award.

Alpha Kappa Psi Medallion. Beta Eta Chapter of Alpha Kappa Psi, a professional fraternity in commerce, awards annually the Alpha Kappa Psi Scholarship Key to the male senior student pursuing a degree in the Department of Economics and Business Administration who has attained the highest scholastic average for three years of collegiate work in this University.

Medal of the North Carolina Association of Certified Public Accountants. The North Carolina Association of Certified Public Accountants annually awards a medal to the senior who, in the judgment of his instructors, is the most outstanding student in accounting in his graduating class.

Julia Dale Prize in Mathematics. This is a prize of books given annually to the undergraduate who shows the greatest proficiency in the study of calculus.

The Milmow Prize: Consists of a certificate of award and a one year's payment of dues in the American Institute of Electrical Engineers for the membership year in which the honoree is awarded his baccalaureate degree. It is awarded annually to that student from North or South Carolina graduating in the Department of Electrical Engineering who, in the opinion of the faculty of that department and as shown by his grades, has made the most progress in electrical engineering during his last year in college.

The George Sherrerd III Memorial Award in Electrical Engineering was established in 1958 by the parents of George Sherrerd III, a graduate of the class of 1955, to recognize outstanding undergraduate scholarship. This award, consisting of the income from a fund of $5000.00, is made annually to that senior student in Electrical Engineering who, in the opinion of the Electrical Engineering faculty, has attained the highest level of scholastic achievement in all subjects and

simultaneously has rendered significant service to the College of Engineering and the University at large. The recipient's name is inscribed on a plaque displayed in the Engineering Building.

The Charles Ernest Seager Memorial Award, established in 1958 by the widow and friends of Charles Ernest Seager, a graduate of the class of 1955, recognizes outstanding achievement in the annual Student Prize Paper Contest of the Duke Branch of the American Institute of Electrical Engineers. The award consists of inscribing the name of the contest winner on a plaque displayed in the Engineering Building.

The American Society of Civil Engineers Prize consists of a certificate of award and a one year's payment of dues in the American Society of Civil Engineers. Awards are made annually by the North Carolina Chapter to the two outstanding seniors in civil engineering based on the recommendation of the faculty of the Civil Engineering Department. The basis for selection is the student's scholastic record, his contribution to the Student Chapter, and his participation in other college activities and organizations.

The Tau Beta Pi Prize. The North Carolina Gamma chapter of Tau Beta Pi engineering national honorary society, awards each year a suitable prize, such as an engineering handbook, to a sophomore student in engineering for outstanding scholastic achievement during the freshman year.

The Phi Lambda Upsilon Prize. Phi Lambda Upsilon, honorary chemical society, yearly awards a suitable prize to an outstanding junior who is majoring in chemistry. The recipient's name is inscribed on a plaque displayed in the Chemistry Library.

The Pegram Chemistry Club Prize is awarded in the spring of each year for scholarship in chemistry, physics, and mathematics. The prize consists of a one-year junior membership in the American Chemical Society and a one-year subscription to either the *Journal of the American Chemical Society* or *Industrial and Engineering Chemistry.* To qualify for this prize, the student must (1) be enrolled as an undergraduate of Duke University and (2) be taking or have taken a fourth-year chemistry course. The winner of this prize is selected by a committee consisting of at least one faculty member and at least two members of the Pegram Chemistry Club; the selection is based on the quality-point average for all courses taken in chemistry, physics, and mathematics. In case of a tie equal awards are given.

The James B. Rast Memorial Award in Comparative Anatomy is given annually by the parents of James Brailsford Rast in memory of their son, a member of the class of 1958 at Duke University. The award, consisting of the *Atlas of Descriptive Human Anatomy* by

Sobotta and bearing the James B. Rast Memorial bookplate, is given to the student who demonstrates the greatest achievement in the study of Comparative Anatomy.

The Erasmus Club Prize in the Humanities. The Erasmus Club is composed of a group of Duke faculty members interested in research in language, literature, and the arts. It seeks to stimulate interest and study in these fields. To encourage undergraduate students in this field, the Erasmus Club has established an annual prize amounting to $25.00, for the best original essay by an undergraduate which embodies the results of research, criticism, or evaluation in some subject in the humanities. Prospective competitors should consult some member of the faculty, preferably their major professor. Essays must be typewritten and must be submitted to the president of the club before the first of April. The club reserves the right to withhold the prize in case there are no essays of acceptable quality.

The Anne Flexner Memorial Award in Creative Writing has been established by the family and friends of Anne Flexner, who graduated from Duke in 1945. It consists of fifty dollars in cash and a number of books chosen by the student. The award is given annually for the best piece of creative writing submitted by a Duke undergraduate. The competition is limited to short stories (5,000-word limit), one-act plays (5,000-word limit), poems (100-line limit), and informal essays (3,000-word limit). Only one manuscript may be submitted by a candidate, and manuscripts must be delivered to the English Office, Room 325 Allen Building, before April 15.

The William Senhauser Prize is given by the mother of William Senhauser in memory of her son, a member of the Class of 1942, who lost his life in the Pacific Theatre of War on August 4, 1944. The award is made annually to the sophomore or junior in Trinity College or the College of Engineering who has made the greatest contribution through participation and leadership in intramural sports. The winner of this prize is chosen by a committee selected by the President of the University.

The *Friends of Duke University Library* offer three prizes of $25.00, $15.00, and $10.00, in an annual contest open to all undergraduate students for the best book collections acquired during their college years. The contest is supervised by the Undergraduate Committee of the Friends of the Library, which announces each fall the terms of the award. Inquiries may be directed to the Curator of Rare Books. Collections entered in the contest are exhibited each spring in the General Library. The prizes are awarded on the basis of the student's collection, a personal interview to determine the overall planning and objectives of his collecting activity, and his familiarity with his own books and the general field of his collecting interest.

The William T. Laprade Prize in History in honor of William T. Laprade, who was a member of the History department at Trinity College and Duke University from 1909 to 1953, and chairman of the department from 1938 to 1952. This prize is awarded to that senior who is graduating with distinction, and whose senior essay in history has been judged unusually meritorious.

Algernon Sydney Sullivan Award. This award is provided by the New York Southern Society. Three awards may be made each year: one to a member of the senior class of Trinity College or the College of Engineering, one to a senior in the Woman's College, and one to a member of the staff of the University or the community. "In the selection of the recipients nothing shall be considered except the possession of such characteristics of heart, mind, and conduct as evince a spirit of love for and helpfulness to other men and women."

Academic Honors

To be eligible for Honors a student must earn, during the year, credit for at least the minimum academic load permitted by the college in which he is registered. All semester hours on which a student receives a grade are counted in the determination of Honors. Students in the freshman, sophomore, and junior classes who earn an average of at least three and one-half quality points per semester hour are given Honors.

The degree of Bachelor of Arts or of Bachelor of Science with distinction is conferred in accordance with the following rules:

To be eligible for consideration for general Honors at graduation a student must have completed in residence a minimum of ninety semester hours. Students who earn an average of at least three and one-half quality points per semester hour are recommended for a degree *magna cum laude.* Those who earn an average of at least three and three-fourths quality points per semester hour are recommended for a degree *summa cum laude.*

Graduation with distinction in his major department is awarded to the student who, in the opinion of the department and of a special committee of the faculty, has demonstrated exceptional achievement in the area of his special interest.

General Academic Regulations

QUANTITY CREDIT AND COURSE LOAD: The term of credit used is the semester hour, which signifies one class period a week throughout the semester. Two or three hours of laboratory work are equivalent to one hour of class work. Two semesters of seventeen weeks each constitute the academic year. For the degree of Bachelor of Arts or Bachelor of Science, credit for 124 semester hours is required; for a degree in Engineering, 148 semester hours.

The normal load of an undergraduate student in Trinity College and the Woman's College is four or five academic courses totaling 14 to 17 semester hours, exclusive of physical education. The maximum number permitted is 19 semester hours, exclusive of physical education. In the College of Engineering the normal load is 17 to 19 semester hours, exclusive of physical education. No student is permitted to take less than 14 semester hours of work without special permission from the dean or to take more than the normal load of work unless his average grade in the preceding semester is higher than C.

QUALITY CREDIT: The requirements for the degree are computed in semester hours and in quality points. Quality points are determined by grades as follows: for an A, four quality points for each semester hour; for a B, three quality points for each semester hour; for a C, two quality points for each semester hour; for a D, one quality point for each semester hour; for an F, no quality points. Credit for at least 248 quality points is required for the degree of Bachelor of Arts or Bachelor of Science, and at least 296 quality points for a degree in engineering.

REQUIREMENTS FOR CONTINUATION IN COLLEGE AND FOR GRADUATION FROM COLLEGE: To continue in college students must, in addition to the requirements listed elsewhere in this Bulletin, pass a minimum number of semester hours, achieve a specified quality point ratio, and earn a minimum number of quality points. The quality point ratio is calculated by dividing the accumulated number of quality points earned by the accumulated number of semester hours carried (not semester hours passed). These requirements are listed in the following table:

For continuation from	The minimum requirement is
The first to the second year	18 s.h. credit and a q.p.r. of 1.2
The second to the third year	42 s.h. credit and a q.p.r. of 1.4
The third to the fourth year	66 s.h. credit and a q.p.r. of 1.6
The fourth to the fifth year, if needed	90 s.h. credit and a q.p.r. of 1.75

In order to graduate, the student must meet additional minimum requirements, as follows:

For graduation from	The minimum requirement is
Trinity and the Woman's College	124 s.h., 248 q.p. and a q.p.r. of 1.9
The College of Engineering	148 s.h., 296 q.p. and a q.p.r. of 1.9

Students of the senior class, irrespective of their average grade in preceding years, must, in order to be eligible for graduation, complete the work of their senior year with a minimum average grade of C. In the case of engineers the C average requirement applies not only to all courses taken in their last year but also to work specified for the senior year in their particular engineering curriculum.

The minimum standards for continuation in the College of Engineering are the same as those listed above, but since the semester hour requirement for graduation in engineering exceeds the requirement of the other colleges, the standards may be adjusted to meet the special requirement of the college. Moreover, application of these standards is based on the courses required in the engineering curriculum.

In addition to the qualitative standards listed above students must pass a minimum number of hours each semester. Freshmen must pass at least 6 semester hours of work, exclusive of physical education, in their first semester and 18 semester hours, exclusive of physical education, in their first year; second semester freshmen and all other students must pass at least 9 semester hours, exclusive of physical education, each semester. The University may require a student whose record is considered unsatisfactory to withdraw, although he has met the minimum requirements set forth in this paragraph.

Reports on proficiency in academic work are sent to parents or guardians after the examinations at the end of each semester. In addition, reports on freshmen are mailed at each mid-semester period.

CLASS STANDING: In Trinity College and the Woman's College to rank as sophomores students must have to their credit at least 26 semester hours and 52 quality points; as juniors, at least 56 semester hours and 112 quality points; and as seniors, at least 90 semester hours and a quality point ratio of 1.75. In the College of Engineering to rank as sophomores they must have to their credit at least 30 semester hours and 60 quality points and must have passed certain specially designated courses of the freshman engineering curriculum; to rank as juniors they must have at least 68 semester hours and 136 quality points and must have passed certain specially designated courses of the sophomore departmental engineering curriculum; and to rank as seniors they must have at least 106 semester hours and a quality point ratio of 1.75 and must have passed certain specially designated courses of the junior departmental engineering curriculum.

In Trinity College and the Woman's College seniors may not take for graduation credit any course open primarily to freshmen, and juniors may not take for graduation credit more than one course open primarily to freshmen. With the consent of the department, however, majors in mathematics, the natural sciences, and science education may, as juniors or seniors, enroll for credit in the introductory courses in the natural sciences and mathematics.

Seniors who at the beginning of a semester lack no more than 9 semester hours for the fulfillment of the requirements for the A.B. or B.S. degree, with the approval of the Dean of the Graduate School, may enroll in graduate courses for a maximum total program of fifteen hours a week.

A tentative list of all candidates for the Bachelor's degree is prepared under the supervision of the dean as early in the college year as possible. A copy is furnished to each department of instruction for information and reference, and a copy is posted on the official bulletin board of the University for the information of the students concerned.

RESIDENCE REQUIREMENTS: A minimum of 30 semester hours of senior-level work in Trinity College and the Woman's College and 36 in the College of Engineering must be earned in residence. Students who meet this requirement but who still lack 6 to 8 semester hours in final fulfillment of requirements may take this work in another institution of approved standing, provided the course is approved by the head of the department concerned and by the dean.

Students who complete in a summer session the work required by the University for the Bachelor's degree will be granted the degree at the end of the summer.

GRADING, ATTENDANCE, AND EXAMINATIONS:

GRADING: Final grades are reported to indicate passing or failing work in designated courses. Final grades are:

(1) *Passing.* Passing grades are A, exceptional; B, superior; C, average; and D, low pass.

(2) *Failing.* A grade of F indicates that the student has failed the course and that in order to receive credit for the course he must repeat the work in class.

Special symbols are used to indicate the following:

(1) *Absence from the final examination.* In all cases in which the student is absent from a final examination, he receives an X in place of a final grade. If he does not present an acceptable explanation for his absence to the appropriate dean's office within forty-eight hours after the scheduled time for the examination, the X is converted to an F. A student absent from examination, if the absence has been excused by the dean, may receive an examination upon payment of a

fee of $5.00 to the Treasurer of the University. The instructor concerned arranges for examination in cases where absences are excused. An X must be cleared by the end of the semester following the examination missed.

(2) *Incomplete work.* If because of illness or other emergency a student's work in a course is incomplete, he may receive an I for the course instead of a final grade. Incomplete courses must be completed before the close of the succeeding semester, otherwise, the I is recorded as F and the course must be repeated in class if the student is to receive credit for it. In case a student whose work is incomplete is also absent from a final examination, he receives an X for the course.

(3) *Withdrawal.* The letter W is used to indicate official withdrawal from a course. If a student drops a course without permission from the dean, the grade for that course is recorded as F. If he drops with permission a course in which he is failing, the grade for that course is recorded as F unless, in the judgment of the dean, circumstances do not justify this penalty.

Attendance: Regular and punctual attendance in class work is expected of all students. Weekly reports of all absences, irrespective of class standing, are made by each instructor and filed in the dean's office. No instructor has the authority to excuse a student from class attendance; it is his duty to report all absences and tardies.

The requirements for continuation in college and for graduation from college emphasize the desirability of assumption by the student of responsibility for class attendance. Controls are exercised and responsibility is placed on the student.

(1) *General regulations for all students:* One unexcused absence per semester hour without penalty is allowed for personal obligations.

The first three tardies in a given course are counted as one absence. Thereafter, each additional tardy is counted as one additional absence.

Absences due to illness when certified by a proper medical official will be excused. Absences due to authorized representation of the University may be excused. Officials in charge of groups representing the University are required to submit names of those persons to be excused to the appropriate dean's office forty-eight hours in advance of the hour when their absences are to commence. Absences due to individual and personal reasons will not be excused.

All absences immediately before and after announced holidays are counted as regular absences, and they result in a loss of two quality points for each absence in each class. Unexcused, consecutive absences, whether excessive or not, result in the loss of quality points as in the case of unexcused, excessive absences. Each excessive or consecutive absence results in the loss of quality points as follows: one quality point for the first absence, two additional for the second, and three

additional for the third. When the third unexcused, excessive or consecutive absence occurs, the student is debarred from the course with a loss of six quality points and an F in the course. When the student has incurred twelve absences, excused and unexcused, in any course he is required to drop the course unless the instructor and the dean concerned grant special permission for him to continue in the course.

When a student's course load is reduced, on account of excessive absences, to less than 12 semester hours, he is required to withdraw from the University.

(2) *Special regulations for Upper Class Students with academic averages of B or above:* Although responsibility for punctual and regular class attendance is placed upon the individual student, all sophomore, junior, and senior students who, in a normal schedule, earn a grade average of 3.0 or above in the preceding semester will be subject to no fixed absence limitation. However, for absences before and after announced holidays two quality points are deducted for each absence in each class. Instructors are expected to refer to the dean for appropriate action any student who in their opinion is causing his work or that of the class to suffer because of absences or tardies.

EXAMINATIONS: Final examinations are held in all subjects in January and May.

DEFICIENCIES IN COMPOSITION: The following regulations have been adopted by the Faculty:

1. In the fall of the junior year every student of Trinity College and of the Woman's College with the following exceptions must take an examination in English usage: (a) students exempted from English 1 and (b) students who earned grades of at least B and C in English 1-2. The regulation does not apply to students of the College of Engineering, which has special course requirements in English composition in addition to English 1-2. Students with irregular schedules resulting from acceleration or transfer to Duke after the fall of their junior year should take the examination in the fall of the year most nearly approximating the fifth semester. In any event, all students with the exceptions noted above must take this examination; *it is a requirement for graduation.* Any student desiring to postpone his examination must have permission in writing from the dean. If a student does not have this permission and fails to take the examination at the scheduled time, he will be permitted to take it on the date appointed for the make-up examination upon the payment of a $5.00 fee. If the student fails to appear for the make-up examination and has no acceptable excuse, he will be personally responsible for arranging with the Bureau of Testing and Guidance to take this examination upon the payment of a fee of $10.00. Until this examination is taken,

the student will not be permitted to complete registration for the following semester. Students who are adjudged deficient by this examination will be required to complete satisfactorily a non-credit laboratory course in remedial English.

2. Whenever the work of a student in any course is unsatisfactory because of errors in English, the instructor may report the student to the dean, who will require him to enroll in remedial English until, in the opinion of the director of the Remedial Laboratory, the deficiency is removed.

3. All instructors are requested to inform their students each semester concerning this regulation.

Other Regulations

CONDUCT AND DISCIPLINE: The University expects of its students loyal and hearty cooperation in developing and maintaining high standards of conduct as well as of scholarship. General University regulations concerning conduct of students will be made available to students when admission is offered, or under other circumstances, upon request. The student in accepting admission indicates his willingness to subscribe to those regulations. The University therefore reserves the right, and matriculation by the student is a concession of this right, to ask the withdrawal of any student whose conduct at any time is not satisfactory to the University, even though no specific charge may be made against the student.

General oversight of the conduct of students and the administering of discipline are under the supervision of the Vice-President in the Division of Student Life. Immediate supervision is entrusted to the Dean of Men and the Dean of Women. However, through the expressed willingness of the students of the University to assume the responsibility of maintaining high standards of morals and honor, the student body has properly become to a great degree self-governing. Two councils, one of men and the other of women, each composed of duly elected representatives of the student body, exercise the authority granted the students for their respective colleges to investigate all cases of misconduct, as well as all other cases of violation of proper student standards and traditions, and to make recommendations of penalties based on their findings. They exert a guiding and stimulating influence for the promotion of high ideals of conduct and of student relationships.

MOTOR VEHICLES: Freshmen are not permitted to own or operate motor vehicles at the University. Members of the upper classes of Trinity College and the College of Engineering and senior students of the Woman's College may operate motor vehicles, however, when in accordance with University regulations.

Students permitted to operate motor vehicles must register them annually at the beginning of the fall semester, or if the vehicle is acquired later, within five days after bringing it to the campus. Such students must show a state vehicle registration and a state operator's license, and also a standard certificate of automobile liability insurance, issued by a recognized company and evidencing coverage of at

least $5,000 per person and $10,000 per accident for personal injury and $5,000 for property damage.

Students under 21 years of age must have the written consent of parent or guardian before operating a motor vehicle at Duke.

SCHOLASTIC REGULATIONS FOR PARTICIPATION IN ATHLETIC AND OTHER ACTIVITIES: Students who received less than a passing grade on more than six hours of required work of the preceding term are ineligible to represent the University in any athletic contest, concert, or other public event.

Members of athletic teams or other student groups engaging in public representation of the University are expected to be carrying their current work satisfactorily. Students may be barred from participation in such representation if, in the opinion of the dean, they fail to meet this requirement.

ENROLLMENT AND REGISTRATION: Students in residence are required to submit to the appropriate dean, not later than the date of the spring registration, cards showing their selection of courses for the following year. Evidence of the payment of the continuing pre-registration deposit of $25.00 is required before the card may be submitted. These cards, approved by the dean, are filed for permanent record in the Central Records Office. Students who do not select their courses for the following year at the time appointed must be readmitted to the college by application to the Director of Admissions. Students whose course cards have been approved in the spring may enroll by mail during the summer. The same regulations, with the exception of the advance deposit, apply to registration for the spring semester.

Students who register in either semester at a date later than that prescribed in the calendar of the Bulletin must pay to the Treasurer a fee of $5.00. They are counted as absent in the work they have missed in the courses to which they are admitted, and these absences carry the same penalty as do other absences from the course. Changes in courses for reasons not arising within the University require a payment of $1.00 for each change made. No course may be elected later than one week after the opening of the semester, and no student may be admitted to any class without an official enrollment.

Requirements for Degrees

DUKE UNIVERSITY offers in Trinity College, the Woman's College, and the College of Engineering, courses of study which lead to the degrees of: Bachelor of Arts; Bachelor of Science; and Bachelor of Science in Civil, Electrical, or Mechanical Engineering.

Bachelor of Arts

The requirements for the degree of Bachelor of Arts are based on the principle that the student will derive the maximum benefit from his college work if his program includes a broad distribution of studies among representative fields of culture, concentration within a special field, and some work of his own choice.

For graduation with the degree of Bachelor of Arts, the following course work must be completed in accordance with the academic regulations as stated in this Bulletin.

Uniform Course Requirements	s.h.
English	6
Foreign Language	6–18
Natural Science	11
Religion	6
Social Science and History	12
Literature, Music, Art, and Philosophy	6
Physical Education	4
Major and Related Work	42
Electives to Make a Total of	124

These requirements are described in detail below.

ENGLISH, 6 s.h.—This requirement is met by the completion of English 1-2. Students whose competence in English usage is certified by Advanced Placement Program Scores may be allowed to substitute English 55 or 56 for English 1 or English 2.

FOREIGN LANGUAGE, 6 to 18 s.h.—This requirement is met by the completion of the third college year of a foreign language. The languages which meet this requirement are French, German, Greek, Latin, Russian, and Spanish. The number of courses required depends on previous training and ability as shown on placement tests. Students presenting for entrance four units of Latin may satisfy the language requirement by the completion of the third college year of Latin or by two years of Greek. In exceptional cases, on the recommendation of the language department concerned and with the approval of the dean of the appropriate college, a student who has completed the second college year of one language may satisfy the requirement by the completion of the first year of another language.

NATURAL SCIENCE, 11 s.h.—To satisfy this requirement a student must complete a laboratory course (8 s.h.) in one of the natural sciences (botany, chemistry, geology, physics, zoology), and one course of at least 3 semester hours selected from mathematics (except Mathematics 11), logic and scientific methodology (Philosophy 48, 103 and 104), or from the sciences listed above.

RELIGION, 6 s.h.—This requirement may be met in one of the following ways: (a) by completing, in the freshman year, Religion 1-2; (b) by completing, in the sophomore year or later, Religion 51-52; (c) by completing, in the sophomore year or later, Religion 55 and one other course selected from those numbered 60-99.

SOCIAL SCIENCE AND HISTORY, 12 s.h.—To satisfy this requirement a student must complete 12 semester hours from the following basic courses: Economics 51-52; Education 54, 104; History 1-2, or 51-52; Political Science 11-12, or 61-62; Psychology 91 to be followed, if desired, by either Psychology 100 or 101; or Sociology 91-92. Six of the 12 semester hours must be taken in economics, history, political science, or sociology. Students who do not present for entrance two acceptable units of history must take History 1-2 or 51-52.

LITERATURE, MUSIC, ART, AND PHILOSOPHY, 6 s.h.—This requirement can be satisfied by a total of 6 semester hours in courses in English or American literature, foreign literature courses numbered above 100, literature courses in translation, courses in aesthetics, art, and music, and courses in Philosophy, except 48, 101, 103, and 104

PHYSICAL EDUCATION, 4 s.h.—Physical education is required during each of the first two years and is normally completed by the end of the sophomore year.

MAJOR AND RELATED WORK, 42 s.h.—Prior to registration in the spring of his sophomore year, each student is required to choose his major field and confer with his departmental adviser about the requirements for major and related work.

The major work consists of 18 to 24 semester hours in one department above the introductory courses. Introductory courses may consist of two one-semester courses in all departments except the Departments of German, Latin, and Romance Languages, in which the introductory courses may consist of four one-semester courses. The choice of courses must be approved by the major department. The related work must be taken in at least two other departments and is selected subject to the approval of the major department and the dean of the appropriate college; it may not include more than one course of 6 or 8 semester hours open primarily to freshmen. With the consent of the department, however, majors in mathematics, the natural sciences, and science education may include as related work introductory courses in mathematics and the natural sciences. Courses satisfying the uniform course requirements may also be counted toward the requirements in major and related work.

The total amount of work that a student may take in any one department toward the Bachelor of Arts degree is limited to a maximum of 36 semester hours. In the Department of Aesthetics, Art, and Music, and the Department of Philosophy, the Department of English, the Department of Economics, Accounting and Business Administration, and the Department of Romance Languages, a total of 54 semester hours is permitted, however, provided a total of not more than 36 semester hours is taken in any one division of the department.

ELECTIVES.—In addition to the uniform courses required and the major and related work, other courses must be completed to make a total of at least 124 semester hours, including 4 semester hours of physical education.

Students whose courses of study permit may elect a maximum of 18 semester hours in engineering, forestry, or medical science. The courses elected in these subjects must be approved by the major department and the dean of the appropriate college.

CHOICE OF A MAJOR FIELD

The requirement of 42 semester hours distributed, as specified above, between a major field and related work is based primarily on the belief that some advanced study in one subject, together with work in allied subjects, is a valuable part of a general education. The selection of a major field usually depends on a student's cultural or vocational interests.

GENERAL PROGRAM

The General Program is designed for the student whose primary interest is in one of the liberal arts subjects. The subjects in which major work is offered are: art, botany, chemistry, economics, education, English, French, geology, German, Greek, history, Latin, mathematics, music, philosophy, physics, political science, psychology, religion, Russian, sociology, Spanish, zoology.

SPECIALIZED PROGRAMS

The student who has chosen a vocation may wish to include specialized training in his program. The following programs of study in preparation for various professions or professional schools are outlined for the guidance of the student.

BUSINESS: A specialized program is offered for students planning to enter business. A student electing this program must take, in addition to the uniform course requirements, the following courses in the indicated sequence.

Freshman Year:	Economics 11 (recommended but not required). Mathematics 21
Sophomore Year:	Economics 51-52, Economics 57-58.
Junior Year:	Economics 105, Economics 138, Economics 143, Economics 168. Economics 181, and one course selected from the following: Economics 144, Economics 147, Economics 158, Economics 182.
Senior Year:	Economics 153, Economics 188, Economics 191, and one course selected from the Economics group numbered above 100.

ACCOUNTING: A student who plans to qualify to take the Certified Public Accountant's examination should elect the following courses of study:

Freshman Year:	Economics 57-58 (may be taken at this time with the permission of the department).
Sophomore Year:	Mathematics 21 is required. Economics 51-52, Economics 171-172.
Junior Year:	Economics 143, Economics 153, Economics 173-174, Economics 181, 182.
Senior Year:	Economics 144 or Economics 184, Economics 275-276, and two courses from the following: Economics 175-176, Economics 177, Economics 178, Economics 180.

A student who does not take Economics 57-58 in the freshman year must take the course in the sophomore year and must make the necessary adjustments in the sequence of subsequent accounting courses.

Students majoring in accounting are urged to familiarize themselves with the educational requirements of the state in which they expect to practice.

RELIGIOUS WORK: A student who plans to enter the ministry or follow some other professional Christian vocation should have a broad

liberal arts background. Recommended majors are English, history, philosophy, religion, and sociology. It is desirable that the student include the following in his program:

English: 12-18 s.h. (including English 55, 56)
History: 6-12 s.h.
Philosophy: 6-12 s.h. (including Philosophy 93, 94)
Psychology: 12-18 s.h.
Social Sciences (other than history): 6-12 s.h.

These suggestions are in harmony with the recommendations of the American Association of Theological Schools for undergraduate courses of study.

Social Work: The student who plans to pursue professional studies in preparation for social work (such as family welfare, child welfare, public welfare, probation and parole, and similar forms of neighborhood and community work) should take his major work in sociology, with related work in other social sciences. The following courses should be included:

History 1-2, or 51-52.
Economics 51-52.
Political Science 61-62.
Psychology 91.
Philosophy (6 s.h.).

Zoology is recommended for the required course in Natural Science. Electives should be chosen mainly from history, economics, political science, education, sociology, philosophy, psychology, or religion.

Teaching: The program for students who intend to teach is designed to prepare for positions either in elementary or secondary schools. All prospective teachers, regardless of the type of school in which they expect to teach, must take Psychology 91, preferably during the sophomore year. Admission to student teaching (Education 101-102 or Education 215-216 is conditioned upon an average of 2.0 overall and in the major or teaching fields. Whatever their majors, they should consult an appropriate member of the Department of Education prior to each registration period so as to be sure of meeting certification requirements of the states in which they wish to teach, and of having places reserved for them in student teaching.

Elementary-School Teaching. Students preparing to teach in the elementary school must complete the following specific requirements: Education 101-102, 103, 118, 142, and 161, History 91-92, and Political Science 11-12, or 61-62, Economics 115, Economics 109, or 118, or 120, Music 151, Physical Education 102, and Health Education 134. Education 101-102 (which includes observation and practice teaching) should be reserved for the senior year.

Secondary-School Teaching. Students preparing to teach in secondary school may meet certification requirements by qualifying in one

teaching subject, but they are strongly advised to choose their electives to meet requirements in two teaching subjects. Prospective secondary-school teachers will ordinarily major in a subject other than education. This makes it extremely important that they establish contact with the Department of Education early as explained above. Courses in materials and methods should be taken prior to student teaching, which may be taken *only* in the senior year.

Science Education Major. Students who intend to teach high school sciences may elect to major in Science Education rather than in a department. The program is designed to meet certification requirements and to provide the broad background of training in the sciences which is needed by science teachers. Students planning to enter this program should consult an adviser in the Department of Education and in one of the science departments. The basic requirements are:

Education 103, 118, 215-216, and 276 or 246.
Mathematics 21 and 22.
Sciences (botany, chemistry, geology, physics, zoology) and mathematics above 22. 36-40 s.h.
1. Courses must be taken in at least two departments.
2. At least 12 s.h. must be taken in courses above the introductory level.

PREPARATION FOR GRADUATE SCHOOL: The student who plans to enter a graduate school of arts and sciences for advanced study should consult an adviser in the field of the proposed advanced study concerning suitable preparation. Most graduate schools have definite requirements in foreign languages for all students. Candidates for the degree of Doctor of Philosophy are required to pass reading examinations, usually in German and French. In some cases other languages may be substituted. As soon as practicable, the student should ascertain the requirements of the particular graduate school he desires to enter.

PREPARATION FOR LAW SCHOOL: Students who plan to study law may select their major work in any field. The following courses are recommended:

Economics 51-52, 57-58.
English 55-56.
History 1-2 or 51-52, 105-106.
Philosophy 48 and 91.
Political Science 61-62.
Sociology 91-92.

PREPARATION FOR MEDICAL OR DENTAL SCHOOL: Students planning to enter a medical or dental school should plan their programs of study from the first semester so as to include those courses required by the Medical Schools of their choice. Foundation courses for the study of medicine usually include: Chemistry 1-2, 61, 151-152; English 55-56; Mathematics 21, 22; Physics, 41-42; and Zoology 1-2, 53.

Special advisers are available for pre-medical and pre-dental students. The names of these advisers may be secured at the dean's office.

Bachelor of Science

For graduation with the degree of Bachelor of Science, the following course work must be completed in accordance with the academic regulations as stated in this Bulletin.

Uniform Course Requirements	s.h.
English	6
French, German, and Russian (second college year)	12–24
Mathematics	6
Natural Science	8
Economics, History, or Political Science	6
Religion	6
Restricted Elective	6
Physical Education	4
Major and Related Work	48
Electives to Make a Total of	124

These requirements are described below.

ENGLISH, 6 s.h.—This requirement is met by the completion of English 1-2. Students whose competence in English usage is certified by Advanced Placement Program Scores may be allowed to substitute English 55 or 56 for English 1 or English 2.

FOREIGN LANGUAGE.—Bachelor of Science candidates must normally complete at least the second college year, or equivalent as determined by examination, of two of the three languages, French, German, and Russian. In special cases, with the permission of the major department and the dean, this requirement may be met by the completion of the third year of one of these languages. On recommendation of the major department and approval of the dean another language may be substituted.

MATHEMATICS, 6 s.h.—This requirement may be met by completion of Mathematics 21 and 22.

NATIONAL SCIENCE, 8 s.h.—This requirement can be satisfied by courses in one of the natural sciences, namely, botany, chemistry, geology, physics, and zoology. The courses must include laboratory work, and may not be counted as part of the major or related work.

SOCIAL SCIENCE AND HISTORY, 6 s.h.—A sudent who does not present for entrance two acceptable units of history (exclusive of other social studies) must take a course in history; otherwise, he has his choice of economics, history, or political science.

RELIGION, 6 s.h.—This requirement may be met in one of the following ways: (a) by completing, in the freshman year, Religion 1-2; (b) by completing, in the sophomore year or later, Religion 51-52; (c) by completing, in the sophomore year or later, Religion 55 and one other course selected from those numbered 60-99.

RESTRICTED ELECTIVE, 6 s.h.—To meet this requirement 6 semester hours in addition to other uniform course requirements must be selected from aesthetics, art, economics, education, English, foreign language, history, music, philosophy, political science, religion, and sociology.

MAJOR AND RELATED WORK, 48 s.h.—Major and related work consists of 48 semester hours in the Natural Sciences. This work must be selected from the departments of botany, chemistry, geology, mathematics, physics, psychology, and zoology. The major work consists of not less than 24 semester hours in one department, the choice of courses being subject to the approval of the department. The major work does not include courses primarily open to freshmen. The related

work is taken in at least two other departments and is selected subject to the approval of the major department. With the consent of the department majors in mathematics and the natural sciences may include as related work introductory courses in mathematics, the natural sciences, and science education. A minimum of 14 semester hours of related work is required, 8 hours of which must be in laboratory science.

ELECTIVES.—In addition to the above, the student must elect sufficient courses to complete, with a quality point ratio of 1.9, the 124 semester hours necessary for graduation.

Students whose courses of study permit may elect a maximum of 18 semester hours in engineering, forestry, or medical science. The courses elected in these subjects must be approved by the major department and the dean of the college.

The total amount of work that a student may take in any one department toward the Bachelor of Science degree is limited to a maximum of 40 semester hours.

On or before the date announced for the spring registration, every sophomore in this group should select his major department in the Natural Sciences and arrange, under the guidance of an adviser in the major department, his program of studies for the following year. He should obtain the adviser's written approval of all courses selected in the division before submitting his program to the dean for final action. In like manner, each upperclassman will recheck the courses in his division of concentration each year with a representative of his major department.

Bachelor of Science in Civil, Electrical, or Mechanical Engineering

The College of Engineering offers fully accredited four-year programs in civil, electrical, and mechanical engineering leading to the degrees of B.S. in C.E., B.S. in E.E. and B.S. in M.E.

To facilitate and encourage the combining of a maximum of liberal arts studies with professional training, the College of Engineering has developed a special plan of cooperation with approved liberal arts colleges. Under this "three-two" plan, an outstanding student may follow an approved program of study at the cooperating liberal arts college for an initial period of three years and then come to Duke University to complete his studies at the College of Engineering in two more years. At the end of the total period of five years, a degree is granted by the cooperating liberal arts college, and a degree of Bachelor of Science in the appropriate branch of Engineering by the College of Engineering. Inquiries concerning this plan should be addressed to the Dean, College of Engineering, Duke University, Durham, North Carolina.

GROUPS OF STUDIES FOR THE DEGREE OF BACHELOR OF SCIENCE IN CIVIL, ELECTRICAL, OR MECHANICAL ENGINEERING

Uniform Freshman Year

FIRST SEMESTER			S.H.	SECOND SEMESTER			S.H.
Engrg	1	Engineering Drawing	2	Engrg	2	Descriptive Geometry	2
Engl	1	English Composition	3	Engl	2	English Composition	3
Hist	E1	U. S. in World Today	3	Hist	E2	U. S. in World Today	3
Math	21	Introductory Calculus	3	*Math	22	Introductory Calculus	3
Phys	41	General Physics	4	Phys	42	General Physics	4
Approved Elective			3	Approved Elective			3
PE		Physical Education	1	PE		Physical Education	1
			19				19

CIVIL ENGINEERING

Sophomore Year

FIRST SEMESTER			S.H.	SECOND SEMESTER			S.H.
Chem	1	Gen. Inorg. Chemistry	4	Chem	2	Gen. Inorg. Chemistry	4
*CE	61	Surveying	5	CE	72	Materials Laboratory I	1
Econ	51	Principles of Economics	3	Econ	52	Principles of Economics	3
Engrg	57	Statics	3	*Engrg	107	Mechanics of Materials	3
Math	63	Intermediate Calculus	3	Engrg	109	Materials Laboratory	1
PE		Physical Education	1	Engl	E93	Written and Oral Communication	3
				Math	64	Intermediate Calculus	3
				PE		Physical Education	1
			19				19

Junior Year

FIRST SEMESTER			S.H.	SECOND SEMESTER			S.H.
CE	101	Materials Laboratory II	1	CE	118	Engineering Materials	2
CE	113	Route Surveying	3	CE	140	Structural Mechanics II	3
*CE	131	Structural Mechanics I	3	EE	123	Fundamentals of EE	3
CE	135	Soils Mechanics	2	EE	125	EE Fundamentals Lab	1
Engrg	115	Dynamics	3	*Engrg	128	Fluid Mechanics	3
†Electives			6	†Electives			6
			18				18

Senior Year

FIRST SEMESTER			S.H.	SECOND SEMESTER			S.H.
CE	123	Hydraulic Engineering	3	CE	116	Transportation Engrg	3
CE	132	Structural Design I	4	CE	124	Sanitary Engineering	3
CE	137	Seminar	1	CE	133	Structural Design II	4
ME	103	Thermodynamics	3	CE	146	Professional Engineering	2
ME	116	ME Laboratory	1	†Electives			6
†Electives			6				18
			18				

*Courses which must be passed before engineering academic standing can be advanced.

†Part of a program of twenty-four semester hours of electives planned with departmental approval to suit the interests and abilities of each student. The program will include Mathematics 111 or a prescribed course in geology; an additional nine semester hours in mathematics, the sciences, or technical subjects; and another nine semester hours in the humanities or the social sciences.

ELECTRICAL ENGINEERING

Sophomore Year

FIRST SEMESTER			S.H.
Chem	1	Gen. Inorg. Chemistry	4
Econ	51	Principles of Economics	3
EE	53	E. E. Fundamentals	1
EE	55	Electric Circuits	4
†Approved Elective			3
Math	63	Intermediate Calculus	3
PE		Physical Education	1
			19

SECOND SEMESTER			S.H.
Chem	2	Gen. Inorg. Chemistry	4
Engl	E93	Written and Oral Communication	4
*EE	56	Electric Networks	4
Engrg	60	Statics-Strength	3
Math	64	Intermediate Calculus	3
PE		Physical Education	1
			19

Junior Year

FIRST SEMESTER			S.H.
EE	109	Electromagnetic Systems	4
EE	111	Electrical Prin. Lab	2
Engrg	115	Dynamics	3
Math	111	Applied Math Analysis I	3
Phys	161	Modern Physics	3
†Humanities-Social Studies Elective			3
			18

SECOND SEMESTER			S.H.
*EE	110	Electromagnetic Systems	4
EE	112	Electrical Prin. Lab	1
Engrg	128	Fluid Mechanics	3
Math	112	Applied Math Analysis II	3
ME	103	Thermodynamics	3
ME	116	M. E. Laboratory	1
†Humanities-Social Studies Electives			3
			18

Senior Year

FIRST SEMESTER			S.H.
EE	165	Senior Seminar	1
EE	181	Electronic Networks	3
EE	183	Electronics Laboratory	1
EE	191	Electric Machinery	3
EE	193	Elec. Mach. Laboratory	1
†EE Elective			3
†Approved Elective			3
†Humanities-Social Studies Elective			3
			18

SECOND SEMESTER			S.H.
EE	166	Senior Seminar	1
EE	182	Electronic Networks	3
EE	184	Electronics Laboratory	1
EE	192	Electric Machinery	3
EE	194	Elec. Mach. Laboratory	1
†Approved Elective			3
†Approved Elective			3
†Humanities-Social Studies Elective			3
			18

*Courses which must be passed before engineering academic standing can be advanced.
†Part of a planned program of electives to be chosen in consultation with the adviser.

MECHANICAL ENGINEERING

Sophomore Year

FIRST SEMESTER			S.H.
Chem	1	Gen. Inorg. Chemistry	4
Engrg	57	Statics	3
Math	63	Intermediate Calculus	3
ME	59	Materials and Processes	3
†Humanistic-Social Elective			3
PE		Physical Education	1
			17

SECOND SEMESTER			S.H.
Chem	2	Gen. Inorg. Chemistry	4
Engrg	107	Mechanics of Materials	3
Engrg	109	Materials Laboratory	1
*Math	64	Intemediate Calculus	3
*ME	52	Kinematics, Kinetics	4
†Humanistic-Social Elective			3
PE		Physical Education	1
			19

Junior Year

FIRST SEMESTER			S.H.
Engl	E93	Written and Oral Communication	3
Math	111	Applied Math Analysis I	3
ME	101	Thermodynamics	3
ME	105	Dynamics of Liquids	3
ME	113	M. E. Laboratory	1
ME	141	Machine Design	3
†Humanistic-Social Elective			3
			19

SECOND SEMESTER			S.H.
Econ	51	Prin. of Economics	3
Math	112	Applied Math Analysis II	3
*ME	102	Thermodynamics	3
*ME	106	Heat Transfer	3
ME	114	M. E. Laboratory	1
*ME	142	Machine Design	3
†Humanistic-Social Elective			3
			19

Senior Year

FIRST SEMESTER			S.H.
EE	123	Fundamentals of E. E.	3
EE	125	EE Fundamentals Lab	1
ME	159	M. E. Laboratory	1
ME	171	Response of Phys. Systems	3
ME	173	Seminar	1
ME Elective			3
†Approved Electives			6
			18

SECOND SEMESTER			S.H.
EE	124	Industrial Elec. Engrg.	3
EE	126	Industrial Elec. Lab.	1
ME	156	Combustion Engines	3
ME	160	M. E. Laboratory	1
ME	162	Power Plants	3
ME	174	Seminar	1
†Approved Electives			6
			18

*Courses which must be passed before engineering academic standing can be advanced.
†The Approved Electives form a planned program of electives to be chosen in consultation with the adviser.

Academic-Professional Courses

The provision whereby a senior may elect the work of the first year in a professional school of the University shall apply solely to eligible students in Trinity College or the Woman's College. The privilege of completing a combined course for the degree is conditioned upon admission to the professional school at the close of the junior year. A student thus admitted registers as a senior in his college and as a first-year student in the professional school.

ACADEMIC-FORESTRY COMBINATION

Pre-professional training in forestry is offered to students of Trinity College who are planning careers in professional forestry. A student who has completed this 3-year program of studies in the liberal arts and sciences outlined below, and who has earned an average grade of C or higher (exclusive of physical education) may, with the approval of the Deans of Trinity College and the School of Forestry, respectively, transfer to the School of Forestry. Upon the satisfactory completion of the forestry course requirements in the Summer Session, and those required in the first year in the School of Forestry (see Bulletin of the School of Forestry) the student will be eligible for the degree Bachelor of Science from Trinity College, Duke University.

The professional degree of Master of Forestry may be earned upon satisfactory completion of the work of the second year in the School of Forestry.

Students wishing information concerning admission to the School of Forestry are invited to consult with the Chairman of the Committee on Admissions of that school.

The program of studies in preparation for admission to the School of Forestry under this combination program includes the following:

UNIFORM COURSE REQUIREMENTS:

	S.H.
Uniform Course Requirements for the B.S. Degree	48–66
Additional Required Courses	24–26
Electives to Make a Total of	94
Summer Field Work	12

These requirements are described in the Requirements for the Bachelor of Science degree in this Bulletin. Spanish may be substituted for French in the foreign language requirement. The natural science requirement is met by completion of Botany 1-2. The economics, history, or political science requirement is met by completion of Economics 51-52. The student who does not present for entrance two acceptable units in history must meet the restricted elective requirement by completion of 6 semester hours in history.

Additional Required Courses:

	S.H.
Chemistry 1-2	8
Engineering Drawing 1-2	4
Geology 51	4
Physics 1-2	8
	24

Electives: The electives are normally chosen from botany, chemistry, economics, mathematics and philosophy. A minimum of 94 semester hours must be obtained, exclusive of summer field work, to

meet uniform course requirements, additional required courses, and electives.

Summer Field Work: This work of 12 weeks, to be taken upon completion of the junior year, includes:

	S.H.
Civil Engineering S110. Plane Surveying	4
Forestry S150. Forest Surveying and Aerial Photo Interpretation	4
Forestry S151. Forest Mensuration	4
	12

Trinity College students in this combination are encouraged to consult with the special adviser for students in the Academic-Forestry Combination. The name of this adviser may be obtained at the School of Forestry office.

ACADEMIC-LAW COMBINATION

A student who has completed with an average grade of C or higher, 96 semester hours of undergraduate work, including the uniform course requirements for the degree of Bachelor of Arts and the work of the junior year in his major and related fields, may, with the approval of the dean of the college, transfer to the Duke University School of Law and be eligible for the degree of Bachelor of Arts from Duke University upon the satisfactory completion therein of the work of the first year.

It is understood that this provision shall apply solely to eligible undergraduates who have completed three years in residence in Duke University, and that not less than the full first-year's work of the Law School will be acceptable for credit towards the bachelor degree.

No single discipline or program of study can be described as the best preparation for the study of law since there are various methods of approach to legal study.

Completion of the undergraduate work necessary to qualify for the Academic-Law Combination does not insure admission to the Duke University School of Law, nor impose any restriction whatever upon its freedom in selecting students for admission. Students wishing further information are invited to consult with the Dean of the School of Law.

Courses of Instruction

Trinity College and the Woman's College

NOTE: Courses primarily for freshmen are numbered from 1 to 49; those primarily for sophomores are numbered from 50 to 99; those primarily for juniors and seniors from 100 to 199; those primarily for seniors and graduates from 200 to 299. The amount of credit for each course is given in semester hours following the description of the course.

The designation (W) or (E) indicates that the course is to be given on the West Campus or on the East Campus. Odd-numbered courses are offered in the fall semester, and even-numbered courses are offered in the spring semester. Double numbers separated by a hyphen indicate that the course is a year-course and must normally be continued throughout the year if credit is received. A student must secure written permission from the instructor in order to receive credit for either semester of a year-course. Double numbers separated by a comma indicate that although the course is a year-course credit may be received for either semester without special permission.

COURSES OPEN PRIMARILY TO FRESHMEN

Air Science 1-2
Art 1-2, 1L-2L
Botany 1, 2
Chemistry 1, 2
Economics 11
Education 1, 5
English 1-2
French 1-2
German 1-2
Greek 1-2, 15
History 1, 2, E1-2
Latin 1-2
Mathematics 11, 21, 22
Music 1-2, 11-12, 47-48
Naval Science 101, 102
Philosophy 48, 49
Physical Education 1, 2
Physics 1-2, 41-42
Political Science 11-12
Religion 1, 2
Russian 1-2
Spanish 1-2
Zoology 1, 2

AESTHETICS, ART, AND MUSIC

PROFESSOR PATRICK, CHAIRMAN; ASSOCIATE PROFESSOR EARL G. MUELLER, DIRECTOR OF UNDERGRADUATE STUDIES IN ART; ASSOCIATE PROFESSOR MARKMAN, SUPERVISOR OF FRESHMAN INSTRUCTION IN ART; ASSOCIATE PROFESSOR JULIA W. MUELLER, DIRECTOR OF UNDERGRADUATE STUDIES IN MUSIC; ASSOCIATE PROFESSOR HANKS, SUPERVISOR OF FRESHMAN INSTRUCTION IN MUSIC; PROFESSOR BONE; ASSOCIATE PROFESSORS BRYAN, HALL, JENKINS, SAVILLE, SUNDERLAND AND WITHERS; ASSISTANT PROFESSORS BRODERSON, HENDRIX AND KLENZ; VISITING LECTURER EARLS; MRS. CUSHMAN, MRS. MCCALL, MR. MAUNEY, MR. STARS, AND MRS. WILKINSON

AESTHETICS

121. THE PRINCIPLES OF ART CRITICISM.—The development of criteria for making sound critical judgments based on analyses of painting, sculpture, architecture, and design. 3 s.h. (E) PROFESSOR PATRICK

FOR SENIORS AND GRADUATES

202. PHILOSOPHY OF ART.—A study of some fundamental issues in aesthetics, with particular reference to the fields of literature, music, and painting. Problems discussed include: the nature and purposes of the arts; meaning in the arts; art and morality; the role of standards in art criticism; aesthetic judgment; interpretation and evaluation. 3 s.h. (E) ASSOCIATE PROFESSOR WELSH

221-222. HISTORY OF AESTHETICS.—Theories of art and beauty in the western world from antiquity to the present. Some attention will be given the developed theories of aesthetics in the Far East. (Formerly 213-214) 6 s.h. (E)
PROFESSOR PATRICK

ART

HISTORY OF ART

1-2. INTRODUCTION TO ART HISTORY.—A historical survey of the development of architecture, sculpture, painting, and the minor arts as material manifestations of the culture of the western world from ancient to modern times, with some reference to primitive, Oriental, and other non-western cultures. The visual arts as a record of a whole civilization. The course will provide the student with terminology and principles necessary to formation of judgments. Open only to freshmen; others, see Art 51-52. 6 s.h. (E & W) STAFF

51-52. INTRODUCTION TO ART HISTORY.—A historical survey of the development of architecture, sculpture, painting, and the minor arts as material manifestations of the culture of the western world from ancient to modern times, with some reference to primitive, Oriental, and other non-western cultures. The visual arts as a record of a whole civilization. The course will provide the student with terminology and principles necessary to formulation of judgments. The aims of this course are identical with those of Art 1-2; the content and method are adapted to the capacities of upperclassmen. Not open to upperclassmen who have received credit for Art 1-2. 6 s.h. (E & W) STAFF

131. ART AND ARCHAEOLOGY OF THE HELLENIC WORLD.—After a preliminary treatment of the archaeological material from the Aegean, the geometric and orientalizing periods, the course deals with the architecture, sculpture and vase painting of ancient Greece from archaic through Hellenistic times. 3 s.h. (W) ASSOCIATE PROFESSOR MARKMAN

132. ROMAN ART AND ARCHAEOLOGY.—The course opens with a treatment of the archaeological background for the formation of the Roman style as derived from Etruscan, Greek and indigenous Italian sources, and then deals with the architecture, sculpture and painting from the early republic to the end of the empire in Italy, and to some extent in the provinces. 3 s.h. (W)
ASSOCIATE PROFESSOR MARKMAN

133. MEDIAEVAL ARCHITECTURE.—A survey of Christian architecture in the Near East, the Balkans, Russia, and western Europe from the beginnings of the mediaeval style in the late classical period to its disintegration in the fifteenth century. (Formerly 101) 3 s.h. (E) ASSOCIATE PROFESSOR SUNDERLAND

134. MEDIAEVAL PAINTING AND SCULPTURE.—A study of painting, including mosaics, manuscripts, stained glass, and sculpture, in western Europe from the late classical period through the fourteenth century. (Formerly 102) 3 s.h. (E) ASSOCIATE PROFESSOR SUNDERLAND

135. RENAISSANCE ARCHITECTURE.—A study of the early phases of the new style based on design elements taken from ancient Rome which replaced the dying Gothic style in Italy in the fifteenth century and in the rest of western Europe in the sixteenth century. 3 s.h. (E) ASSOCIATE PROFESSOR SUNDERLAND

136. NORTHERN RENAISSANCE ART.—A study of book illumination, panel painting, graphic arts, and sculpture as expressions of literary, religious, and philosophical ideas of the fifteenth and sixteenth centuries in the Low Countries, Germany, and France. The formation of the northern realistic tradition in late Gothic Art and the relationship of the North with the Italian Renaissance will be developed in detail. Some emphasis will be placed on indivdual artists such as the

Van Eycks, Van der Weyden, Bouts, Van der Goes, Bosch, Bruegel, Grünewald, and Dürer. (Formerly 125) 3 s.h. (E) ASSOCIATE PROFESSOR E. MUELLER

137. ITALIAN RENAISSANCE PAINTING AND SCULPTURE.—The evolution of art forms in Italy during the fifteenth and sixteenth centuries with emphasis on the art of Florence, Rome, and Venice. (Formerly 123) 3 s.h. (E)
ASSOCIATE PROFESSOR JENKINS

138. EUROPEAN ARCHITECTURE 1550-1750.—A study of the alteration of the High Renaissance ideal by Mannerist and Baroque designers in Italy, and the consequences for the rest of western Europe, especially for absolutist France and parliamentary England. 3 s.h. (E) ASSOCIATE PROFESSOR HALL

139. THE RISE OF CONTEMPORARY ARCHITECTURE.—A study of the sources and evolution of the architecture of today, from the eighteenth century conflict between Romantic Historicism and Industrialism to the work of Gropius, LeCorbusier, Wright, and their successors. (Formerly 105) 3 s.h. (E)
ASSOCIATE PROFESSOR HALL

140. SEVENTEENTH AND EIGHTEENTH CENTURY ART.—A study of the Baroque style in painting and sculpture. Particular emphasis will be given to developments in Spain, France, and the Low Countries. 3 s.h. (E)
ASSOCIATE PROFESSOR JENKINS

141. AMERICAN ART.—A survey of architecture, sculpture, and painting in America from the time of the first settlers to the present day, including a consideration of the contributions of the English, Dutch, French, and Spanish to the artistic heritage of the United States. (Formerly 94) 3 s.h. (E)
ASSOCIATE PROFESSOR SUNDERLAND

142. MODERN PAINTING AND SCULPTURE.—The development of European painting and sculpture from the period of the French Revolution to the present. Introduction to parallel and contemporary trends in the United States. (Formerly 129 and 130) 3 s.h. (E) PROFESSOR PATRICK

143. THE HISTORY OF PRINTS AND DRAWINGS.—A historical and critical study of drawings and prints from the fifteenth century to the present with reference to functions, values, and relationships to other forms such as painting, sculpture, and the book. (Formerly 133) 3 s.h. (E) ASSOCIATE PROFESSOR E. MUELLER

FOR SENIORS AND GRADUATES

215. RELIGIOUS ART OF THE ANCIENT NEAR EAST.—A specialized study of the development of art, particularly architecture and sculpture, as the material expression of religious ideas in Egypt, Mesopotamia, and in part of Syria and Palestine, to the Persian conquest. 3 s.h. (W) ASSOCIATE PROFESSOR MARKMAN

216. RELIGIOUS ART OF THE CLASSICAL WORLD.—A specialized study of the religious art, particularly architecture and sculpture, of Greece and Rome, with special emphasis on the monuments in the Near East. 3 s.h. (W)
ASSOCIATE PROFESSOR MARKMAN

217. AEGEAN ART.—A study of the problems of Aegean art as the forerunner of Greek art and in relation to the contemporary civilization of the eastern Mediterranean world. 3 s.h. (W) ASSOCIATE PROFESSOR MARKMAN

218. EARLY GREEK ART.—A study of the problems of the origin and development of Greek art in the Geometric period to the end of the Archaic. 3 s.h. (W)
ASSOCIATE PROFESSOR MARKMAN

233. EARLY MEDIAEVAL ARCHITECTURE.—The development of religious architecture from the time of Constantine to the end of the First Romanesque style in the third quarter of the eleventh century. 3 s.h. (E)
ASSOCIATE PROFESSOR SUNDERLAND

234. ROMANESQUE SCULPTURE.—The development of sculpture in western Europe from the early Christian period through the culmination of Romanesque art in the west portal of Chartres Cathedral. 3 s.h. (E)
ASSOCIATE PROFESSOR SUNDERLAND

240. ARCHITECTURE OF NORTH AMERICA.—A study illustrating the transplantation of European architectural customs since the sixteenth century; the time-lag in transit and acceptance of later European developments; the gradual assumption of confident independence in design; and the emergence of international leaders in the United States. (Formerly 106) 3 s.h. (E) Associate Professor Hall

Design

Students other than art majors may receive not more than eight semester hours credit for work in studio courses. For any number of semester hours of credit in studio courses an equal number of hours must be taken in History and Criticism. The introductory courses 1L-2L or 51L-52L are prerequisite for all courses in Design.

1L-2L. DESIGN LABORATORY.—This course aims to develop the student's visual faculty through practice with design elements and experience with media. Freshmen intending to elect further courses in Art are advised to carry this course concurrently with Art 1-2. Open only to freshmen enrolled in Art 1-2; others, see Art 51L-52L. 2 s.h. (E)

Associate Professor E. Mueller; Assistant Professor Broderson

51L-52L. DESIGN LABORATORY.—The aims, content, and method of this course are similar to those of Art 1L-2L. Upperclassmen intending to elect further courses in Art are advised to carry this course concurrently with Art 51-52. Open only to upperclassmen enrolled in Art 51-52, and to those who have completed Art 1-2 or 51-52 without electing Design Laboratory. A senior in his last semester may receive credit for one semester. 2 s.h. (E)

Associate Professor E. Mueller; Assistant Professor Broderson

53-54. BEGINNING STUDIO.—A studio course offering experiment and practice with formal elements of composition in various media. Particular emphasis will be given to drawing; watercolor, collage, and three-dimensional media will be secondarily considered. 4 s.h. (E)

Associate Professor E. Mueller; Assistant Professor Broderson

55, 56. PAINTING.—A studio course designed to give experience in painting media with individual and group criticism, and discussion of important historic or contemporary ideas in painting as related to student work. Prerequisite: Art 53-54 or consent of the instructor. 4 s.h. (E)

Associate Professor E. Mueller; Assistant Professor Broderson

157, 158. ADVANCED PAINTING.—Emphasis is given to the techniques of various painting and design media. Prerequisite: 55, 56. 4 s.h. (E)

Associate Professor E. Mueller; Assistant Professor Broderson

159, 160. PRINTMAKING.—This course presupposes a knowledge of design and skill in drawing. Practice in wood engraving; block printing; and in copperplate engraving, etching, aquatint, and drypoint. Reference will be made to prints in relation to the design of the book, and historic examples of the art of the print will be analyzed in the study of these techniques. Prerequisite: 53-54. 4 s.h. (E)

Associate Professor E. Mueller; Assistant Professor Broderson

DEPARTMENTAL MAJOR IN ART

Prerequisite: Introduction to Art History (1-2 or 51-52); or, with the approval of the Director of Undergraduate Studies, equivalent hours in 100 level courses which form a background for the History of Art.

Major Requirements: The student will select in consultation with the departmental adviser a sequence of courses emphasizing either the History of Art or Design.

a. History of Art: 24 semester hours from 100 and 200 level courses distributed over the entire field of Art History, and a concentration of courses in at least two areas.

b. Design: 22 semester hours, of which 16 must be in Design and 6 from courses in the History of Art and Theory.

Related Work: 18 semester hours elected from courses in Aesthetics, Anthropology, English, German, Greek, Latin and Roman Studies, History, History of

Music, History of Religion, Philosophy, Psychology, Romance Languages, and Sociology.

MUSIC

Courses in music are offered both for the general student who wishes to acquire knowledge of music as literature and on a more technical level for those prepared to major in the field. The courses marked * are open to general students without prerequisites.

THEORY

*11-12. THEORY I.—The elements of harmony, rhythm, and form; the visual and aural recognition of scales, intervals, triads, and seventh chords, and their functions in relation to the system of tonality; harmonization of melodies; development of rhythmic discrimination. Designed for those students who wish to pursue a more technical study of music. Three lectures and two laboratory hours. Open only to freshmen. 8 s.h. (E) STAFF

*59-60. BASIC MUSICIANSHIP.—A study of the principles involved in the art of musical performance. Rhythms, notation, *tonal organization,* sight reading, ear training. Open to general students. No musical experience or prerequisite required. This credit may not be counted as partial fulfillment of the Literature, Music, Art, Philosophy uniform requirements. Two meetings per week. 2 s.h.

*61-62. THEORY I.—An amplification of Music 11-12. Open to upperclassmen who have not had Music 11-12. 8 s.h. (E) STAFF

73-74. THEORY II.—A continuation of Music 11-12, plus analysis and composition of the smaller forms; further development of proficiency in harmonization; continuation of aural training; introductory study of counterpoint. Prerequisite: Music 11-12 or 61-62. 6 s.h. (E)
ASSOCIATE PROFESSOR BRYAN AND ASSISTANT PROFESSOR KLENZ

117-118. THEORY III.—A continuation of Music 73-74. Emphasis upon development of technical and expressive means and stylistic treatment by practical work in composition, and analysis and observation of larger forms; further study of counterpoint. The completion of an original large form composition for chamber group, chorus, or orchestra. Prerequisites: Music 11-12 or 61-62, and 73-74. 4 s.h. (E)
ASSISTANT PROFESSOR KLENZ

121. CONDUCTING.—The conducting of orchestral and vocal scores. Score-reading and analysis, principles of interpretation, establishment of vocal and instrumental conductoral techniques leading to practical experience in conducting the department musical organizations in rehearsal. Prerequisites: Music 11-12 or 61-62, and 73, or consent of the instructor. 3 s.h. (E) PROFESSOR BONE

122. ORCHESTRATION.—A study of the technical characteristics and transpositions of the instruments of the modern symphony orchestra and concert band. Instrumentation of piano scores or original compositions for string, woodwind, brass ensembles, and for full symphony orchestra or concert band. Prerequisites: Music 11-12 or 61-62, and 73, or consent of the instructor. 3 s.h. (E)
ASSOCIATE PROFESSOR BRYAN

HISTORY AND CRITICISM

*1-2. INTRODUCTION TO MUSIC.—Rhythm, melody, harmony, form, instruments of the orchestra, development of listening technique, and critical appreciation. Study of the lives and works of great representative composers from 1700 to the present. Open only to freshmen; others, see Music 51-52. 6 s.h. (E)
PROFESSOR BONE, ASSOCIATE PROFESSORS HANKS AND WITHERS

*51-52. INTRODUCTION TO MUSIC.—Rhythm, melody, harmony, form, instruments of the orchestra, development of listening technique, and critical appreciation. Study of the lives and works of great representative composers from 1700 to the present. The aims of this course are identical with those of Music 1-2; the content and method are adapted to the capacities of upperclassmen. Open only to upperclassmen who have not completed Music 1-2. 6 s.h. (E & W) STAFF

*125. MASTERWORKS OF MUSIC LITERATURE.—An intensive study of selected masterworks which represent the principal currents in modern music history. Compositions by Bach, Mozart, Beethoven, Brahms, Debussy and Bartok will constitute a frame of reference for historical, biographical and stylistic analysis. No prerequisite required. 3 s.h. (E) ASSOCIATE PROFESSOR J. MUELLER

133. ORCHESTRAL LITERATURE.—A study of orchestral suites, overtures, concerti, symphonies, and symphonic poems selected from literature of the eighteenth century to the present. 3 s.h. (E) PROFESSOR BONE

*134. CHORAL LITERATURE.—A study of representative oratorios, cantatas, and masses from Bach to Stravinsky; aesthetic and religious implications of sacred choral composition and performance from the Baroque to the present. 3 s.h. (E) ASSOCIATE PROFESSOR SAVILLE; DR. EARLS

135. PIANO LITERATURE.—A comprehensive survey of the great works for keyboard instruments, from the time of the English virginal composers to the present. Prerequisites: Music 47A, 48A, 97A, and 98A, or consent of the instructor. 3 s.h. (E) ASSOCIATE PROFESSOR WITHERS

136. SOLO SONG LITERATURE.—A study of standard recital repertoire; early Italian and English songs, German lieder, the French and English art song. Open to junior and senior Applied Voice majors. 3 s.h. (E) ASSOCIATE PROFESSOR HANKS

137. CHAMBER MUSIC.—A study of form, style, and interpretation of masterpieces of chamber music. Prerequisites: Music 1-2 or 51-52, or 11-12 or 61-62, or consent of the instructor. 3 s.h. (E) ASSOCIATE PROFESSOR J. MUELLER

138. CONTEMPORARY MUSIC.—A critical survey of contemporary stylistic trends and theiry in the light of their twentieth-century background. Prerequisites: Music 1-2 or 51-52, or 11-12 or 61-62, or consent of the instructor. 3 s.h. (E) ASSISTANT PROFESSOR KLENZ

147-148. HISTORY OF MUSIC.—The history of the development of music as a manifestation of Western culture from mediaeval to modern times. The rise of Christianity through the Renaissance, first semester; the Baroque to the present, second semester. Prerequisite: Music 1-2 or 11-12 or 61-62, or consent of the instructor. 6 s.h. (E) ASSOCIATE PROFESSOR SAVILLE; ASSISTANT PROFESSOR KLENZ
Formerly 95-96 and 145-146. 147 not open to students who have had 145-146. 148 not open to students who have had 95-96.

*163. MUSIC IN THE EIGHTEENTH CENTURY.—The development of important instrumental and vocal media and formal concepts through study of the music, the musicians and their environment. 3 s.h. (E) ASSOCIATE PROFESSOR BRYAN

*164. MUSIC IN THE NINETEENTH CENTURY.—A study of the music of the nineteenth century, from Beethoven to Debussy, with attention to artistic and literary influences, and the relations among the creative minds of the time. Individual projects. 3 s.h. (E) ASSOCIATE PROFESSOR J. MUELLER

*165. OPERA LITERATURE.—A study of opera from Handel to Berg; aesthetic and cultural implications of opera from the Baroque to the present. 3 s.h. (E) ASSOCIATE PROFESSOR SAVILLE; DR. EARLS

195-196. COLLEGIUM MUSICUM.—Studies in the integration of music history, theory, and performance. Survey of sources, monuments, and bibliographical techniques. Preparation for performance of representative musical literature through analysis, realization of notations, and stylistic reconstruction. Classroom discussion and reports; also laboratory. Designed for music majors in history or theory and open to others by consent of the instructor. 4 s.h. Laboratory may be taken separately under Applied Music, Medium F. (E) ASSISTANT PROFESSOR KLENZ

MUSIC EDUCATION

57-58. VOCAL DICTION.—Problems of diction as specifically applied to the art of singing. Required of all Applied Voice majors. 2 s.h. (E) ASSOCIATE PROFESSOR HANKS

106. PIANO METHODS AND MATERIALS.—A study of the materials and methods of piano pedagogy. The appropriate choice of essential and supplementary literature. Development of technique, style, and musicianship. Supervised practice teaching. Prerequisites: Music 47A, 48A, 97A, and 98A, or consent of the instructor. 3 s.h. (E) ASSOCIATE PROFESSOR WITHERS

151. PUBLIC SCHOOL MUSIC EDUCATION.—For elementary Education majors. Development of the child through participation in and understanding of music. Child voice and song; rhythmic activity; discriminative listening; music-reading; use of elementary instruments such as auto-harp, psaltery, and the rhythm band instruments. Music as a creative art in its own right and as an adjunct to other studies in the elementary school. 3 s.h. (E)
ASSOCIATE PROFESSOR SAVILLE; MRS. MCCALL

APPLIED MUSIC

The study of Applied Music concerns the understanding of music literature through performance. Instruction is offered in the following media: A. Piano; B. Strings; C. Woodwinds; D. Brass; E. Voice; F. Ensemble—Piano, Instrumental, Vocal, and the Departmental Ensembles listed below; G. Organ. Instruction in media A through E may be private or in classes limited to a minimum of 4 and a maximum of 7 students. Class instruction is restricted to the first 4 grades of proficiency. Class instruction shall be designated by adding the letter X to the appropriate medium and year-in-school classification. (Example: junior year, Woodwinds, class instruction is recorded 147CX.)

Students must register for all Applied Music courses through the Director of Undergraduate Studies in Music. The course numbers listed below refer to the student's class standing and not his musical proficiency.

47A, 48A; 97A, 98A; 147A, 148A; 197A, 198A. PIANO.—For freshmen, sophomores, juniors, seniors. 1 or 2 s.h. (E)
ASSOCIATE PROFESSOR WITHERS; MRS. WILKINSON

47B, 48B; 97B, 98B; 147B, 148B; 197B, 198B. VIOLIN, VIOLA, 'CELLO.—For freshmen, sophomores, juniors, seniors. 1 or 2 s.h. (E)
ASSOCIATE PROFESSOR J. MUELLER; ASSISTANT PROFESSOR KLENZ

47C, 48C; 97C, 98C; 147C, 148C; 197C, 198C. WOODWINDS.—For freshmen, sophomores, juniors, seniors. 1 or 2 s.h. (E) PROFESSOR BONE

47D, 48D; 97D, 98D; 147D, 148D; 197D, 198D. BRASS.—For freshmen, sophomores, juniors, seniors. 1 or 2 s.h. (E) ASSOCIATE PROFESSOR BRYAN

47E, 48E; 97E, 98E; 147E, 148E; 197E, 198E. VOICE.—For freshmen, sophomores, juniors, seniors. 1 or 2 s.h. (E) ASSOCIATE PROFESSOR HANKS; MRS. CUSHMAN

47F, 48F; 97F, 98F; 147F, 148F; 197F, 198F. ENSEMBLE.—For freshmen, sophomores, juniors, seniors. 1 s.h. (E) STAFF

47G, 48G; 97G, 98G; 147G, 148G; 197G, 198G. ORGAN.—For freshmen, sophomores, juniors, seniors. 1 or 2 s.h. (E) ASSISTANT PROFESSOR HENDRIX; MR. MAUNEY

Credits: Credit for instruction in media A, B, C, D, E, and G is granted on the basis of 2 s.h. per semester for *one hour* of private instruction per week and a minimum of six hours practice weekly; or, 1 s.h. per semester for *one-half* hour of private instruction, or one period of class study, and a minimum of six hours practice per week. An additional weekly class meeting for performance and criticism may be required by the instructor without additional credit.

Credit for instruction in medium F is granted on the basis of 1 s.h. per semester for one rehearsal period of instruction and a minimum of three hours practice per week.

No credit in Applied Music will be allowed unless the student satisfactorily completes at some time before graduation six semester hours in Music Theory, Music History, or Music Literature.

Students other than music majors may receive not more than 8 s.h. credit for work in Applied Music. They may elect, after consultation with the Department,

private instruction either on the 1 hour (2 s.h. credit) or the ½ hour (1 s.h. credit) basis.

Music majors must earn a minimum of 6 s.h. and may earn a maximum of 18 s.h. in Applied Music according to the following areas of concentration:

Majors in Music Theory or Music History and criticism must earn a minimum of 6 s.h. credit in Applied Music. (Credit may be reckoned from Grade I.)

Majors in Applied Music must register for one hour of private instruction and may earn a maximum of 18 s.h. credit in Applied Music.

Majors in Music Education who expect to teach music in the public schools should plan their Applied Music programs in consultation with the Director of Undergraduate Studies in Music. The credit hours in Applied Music required for certification in North Carolina may be earned through a program which includes the study of a major medium, a minor medium, and participation in departmental organizations.

Fees: Fees are charged for all Applied Music media excepting F, Ensemble, and for practice facilities. Music majors who pursue the course of study outlined below will pay no fees for Applied Music instruction. Fees are payable to the Treasurer's Office of Duke University at the beginning of each semester as follows:

One ½ hour private lesson per week for one semester	$45.00
Two ½ hour private lessons per week or one 1-hour private lesson per week for one semester	80.00
One 1-hour class lesson per week for one semester	20.00
Three hours' use of cubicle with piano per week for one semester (Theory and Voice Class students)	7.50
Six hours' use of cubicle with piano per week for one semester (Piano and private Voice students)	15.00
Six hours' use of cubicle without piano per week for one semester	10.00
Six hours' use of cubicle with departmental organ per week for one semester	15.00

DEPARTMENTAL MAJOR IN MUSIC

Prerequisite: Music 11-12 or 61-62.

Major Requirements: 24 s.h. including a minimum of 6 s.h. in Applied Music. The major student shall select, in consultation with his departmental adviser, a sequence of Music courses emphasizing (a) theory, or (b) history and criticism, or (c) education, or (d) applied music. The student must participate in one of the Departmental Ensembles or Organizations during each semester of undergraduate study.

DEPARTMENTAL ENSEMBLES

Brass Ensemble
Chamber Orchestra
Collegium Musicum
Madrigal Singers
Piano Ensemble
Vocal Ensemble

DEPARTMENTAL ORGANIZATIONS

Duke University Concert Band
Duke University Symphony Orchestra

AIR SCIENCE

PROFESSOR DUNCAN, LT. COLONEL, USAF, CHAIRMAN; ASSOCIATE PROFESSOR HALSTED, MAJOR, USAF, DIRECTOR OF UNDERGRADUATE STUDIES; INSTRUCTOR POWELL, CAPTAIN, USAF, INSTRUCTOR INNIS, CAPTAIN, USAF

ELIGIBILITY REQUIREMENTS.—All physically qualified freshmen who are citizens of the United States and are enrolled in Trinity College or the College of Engineering are eligible to enroll in the Air Force ROTC. Veterans may be exempted from the freshman and sophomore courses under certain conditions. In special cases where permission has been granted, certain qualified students from the Graduate and Professional Schools may be enrolled.

DEPOSIT REQUIRED.—Each student must make a deposit of twenty dollars with the University Treasurer to insure return of all government property.

AIR FORCE ROTC COURSES.—All students pursue the same generalized courses. Specialized training will be given when the individual enters the Air Force.

The courses are established by the United States Air Force and are approved by the College as electives for all undergraduates. Field or laboratory instruction in leadership, drill, and exercise of command is included as a part of all courses to indoctrinate the student in the fundamental principles of command.

BASIC COURSES

The following courses are required of students in the Air Force Reserve Officers Training Corps, as outlined in the various curricula:

AS 1-2. FIRST YEAR BASIC AIR SCIENCE.—The course introduces the student to the AFROTC Program, the Elements and Potentials of Air Power, Air Vehicles and Principles of Flight, Military Instruments of National Security and Basic Aeronautical Science. The fundamentals of the global concepts of the air age are studied in relation to the historic development of military and civilian aviation. A survey is made of the career opportunities offered by the Air Force. 4 s.h. (w)
CAPTAIN POWELL

AS 51-52. SECOND YEAR BASIC AIR SCIENCE.—Stress is laid upon the Evolution and Elements of Aerial Warfare including targets, weapons, aircraft, air oceans and air bases. The employment of the Air Force, Space Problems and Possibilities in peacetime and during combat operations are analyzed. 4 s.h. (w)
CAPTAIN INNIS

ADVANCED COURSES

All students selected to continue in Air Science pursue:

AS 101-102. FIRST YEAR ADVANCED AIR SCIENCE.—The first semester is concerned with the Air Force Commander and his staff, Techniques of Problem Solving, Communication Processes and Instructing in the Air Force. The second semester deals with the Military Justice System, seminar studies in the Principles of Leadership and Management and Preparation for Summer Training. Prerequisites: AS 1-2 and 51-52 or equivalent. 8 s.h. (w) MAJOR HALSTED

AS 201-202. SECOND YEAR ADVANCED AIR SCIENCE.—The first semester includes the study of International Relations, the Problems of Flight and applied air sciences of Weather and Navigation. The second semester is concerned with the Military Aspects of World Political Geography concluding with a Briefing for Commissioned Service. Prerequisites: AS 1-2, 51-52 and 101-102. 8 s.h. (w)
LT. COLONEL DUNCAN

BIOLOGY

See courses listed under Botany and Zoology.

BOTANY

PROFESSOR OOSTING, CHAIRMAN; ASSOCIATE PROFESSOR JOHNSON, DIRECTOR OF UNDERGRADUATE STUDIES; ASSOCIATE PROFESSOR PHILPOTT, SUPERVISOR OF FRESHMAN INSTRUCTION; PROFESSORS ANDERSON, BILLINGS, HARRAR, HUMM, KRAMER, AND NAYLOR; ASSOCIATE PROFESSOR PERRY; ASSISTANT PROFESSORS CULBERSON AND WILBUR; AND ASSISTANTS

1. GENERAL BOTANY.—An introduction to the structure and life-processes of seed plants and the environmental factors influencing their distribution. Laboratory, discussions, and field trips. Three two-hour periods. 4 s.h. (w & e) STAFF

2. GENERAL BOTANY.—An introduction to reproduction, heredity, and identification with emphasis on flowering plants; and an introduction to the microflora

important in biological communities. Three two-hour periods. Prerequisite: Botany 1. 4 s.h. (W & E) STAFF

51. CULTURE AND PROPAGATION OF PLANTS.—Experimental studies of the processes involved in growth, and the application of this knowledge to the selection, growth, and propagation of plants. Prerequisite: one year of botany. 4 s.h. (E) Not open to pre-Forestry students. ASSISTANT PROFESSOR CULBERSON

52. PLANT IDENTIFICATION.—Practice in the identification of local plants especially flowering plants, and a study of the principles and rules underlying plant classification. Laboratory, lectures, and field trips. Prerequisite: one year of botany. 4 s.h. (W) ASSISTANT PROFESSOR WILBUR

53. ECOLOGY OF ECONOMIC PLANTS.—The principles of plant growth and distribution as applied to crop plants. Forest, grassland, and representative cultivated species will be considered in relation to environment. Prerequisite: one year of a natural science. 3 s.h. (E) Not open to pre-Forestry students.
PROFESSOR OOSTING

55. STRUCTURE OF VASCULAR PLANTS.—A detailed study of the vegetative and reproductive tissues of seed plants; and a survey of the several groups of vascular plants emphasizing relationships of body structures and life histories. Prerequisite: one year of botany. 4 s.h. (E) ASSOCIATE PROFESSOR PHILPOTT

101. PRINCIPLES OF HEREDITY.—The basic principles of heredity and their significance. Lectures, three hours: laboratory, two hours; conference, one hour. Laboratory work includes experimental breeding of the fruit fly. May be taken as a lecture course without laboratory. Prerequisite: one (high-school or college) course in biology, botany, or zoology. High-school algebra or one year of college mathematics recommended. 3 or 4 s.h. (W) ASSOCIATE PROFESSOR PERRY

103. GENERAL BACTERIOLOGY.—A study of the morphology and fundamental physiological processes of bacteria; their relationship to sanitation, public health, soil fertility, and food preservation. Prerequisite: one year of botany or zoology, or equivalent. 4 s.h. (W) ASSOCIATE PROFESSOR JOHNSON

104. THE STRUCTURE AND IDENTIFICATION OF LOWER PLANTS.—A study of representative examples of algae, fungi, mosses and liverworts, including collection, identification, and classification of common forms. Offered in alternate years. Prerequisite: one year of botany. 4 s.h. (W) PROFESSOR ANDERSON

151. INTRODUCTORY PLANT PHYSIOLOGY.—The principal physiological processes of plants, including water relations, synthesis and use of foods, and growth phenomena. Prerequisite: Botany 1, 2 or equivalent; one year of chemistry recommended. 4 s.h. (W) PROFESSOR KRAMER

156. PLANT ECOLOGY.—The principal factors affecting plants and plant communities as they exist in different environments. Laboratory, lectures, and field trips. Prerequisites: Botany 1, 2 and 52, or equivalent. 4 s.h. (E)
PROFESSOR BILLINGS

202. GENETICS.—The principles of heredity, their cytological basis, and their bearing on other fields of biology. Laboratory work involves experimental breeding of the fruit fly and interpretation of data from the breeding of plants. Offered in alternate years. Prerequisites: one year of botany or zoology, or equivalent, and one year of college mathematics. 4 s.h. (W) ASSOCIATE PROFESSOR PERRY

203. PLANT CYTOLOGY.—A study of the structure and organization of plant cells in relation to growth, reproduction and especially heredity. Offered in alternate years. Prerequisite: one year of botany. 4 s.h. (W) PROFESSOR ANDERSON

204. ANATOMY AND MORPHOLOGY OF VASCULAR PLANTS.—A study of vegetative and reproductive tissues of vascular plants including selection and preparation of fresh plant materials. An analysis of some of the significant literature bearing upon function, development, ecology and phylogeny. Prerequisite: Botany 55 or equivalent. 4 s.h. (E) ASSOCIATE PROFESSOR PHILPOTT

216. BOTANICAL MICROTECHNIQUE.—Methods and theory in preparation of plant tissues for temporary mounts and permanent microscopical slides. Prerequisite: Two years of natural science. 4 s.h. (E) ASSOCIATE PROFESSOR PHILPOTT

218. ILLUSTRATIVE TECHNIQUES.—A study of botanical illustrative methods, including theory and use of the microscope, microscopical measurements, drawing, photomicrography, botanical photography, darkroom procedure, lantern slides and the preparation of illustrative material for publication. Prerequisite: Two semesters of botany, zoology or forestry. 2 s.h. (W) PROFESSOR ANDERSON

221. INTRODUCTORY MYCOLOGY.—Field and laboratory study of the vegetative and reproductive structures of the fungi and slime molds. Methods of collection, isolation, propagation, and identification of the major orders as represented in the local flora. Prerequisite: One year of biological science. 4 s.h. (W) ASSOCIATE PROFESSOR JOHNSON

225-226. SPECIAL PROBLEMS.—Students with adequate training may do special work in the following fields:

a. MYCOLOGY, AND PLANT PATHOLOGY. ASSOCIATE PROFESSOR JOHNSON
b. CYTOLOGY. PROFESSOR ANDERSON
c. ECOLOGY. PROFESSORS OOSTING AND BILLINGS
d. GENETICS. ASSOCIATE PROFESSOR PERRY
e. MORPHOLOGY AND ANATOMY OF HIGHER GROUPS. ASSOCIATE PROFESSOR PHILPOTT
f. MORPHOLOGY AND TAXONOMY OF LOWER GROUPS. PROFESSOR ANDERSON, ASSOCIATE PROFESSOR HUMM, ASSISTANT PROFESSOR CULBERSON
g. PHYSIOLOGY. PROFESSORS KRAMER AND NAYLOR
i. TAXONOMY OF HIGHER GROUPS. ASSISTANT PROFESSOR WILBUR
j. SENIOR SEMINAR.—1 s.h. (W) STAFF
m. MICROBIOLOGY. ASSOCIATE PROFESSOR HUMM

252. PLANT METABOLISM.—The physicochemical processes and conditions underlying the physiological processes of plants. Prerequisite: Botany 151 or equivalent; organic chemistry recommended. 3 s.h. (E) PROFESSOR NAYLOR

254. PLANT WATER RELATIONS.—A study of factors affecting the availability of water, its absorption and use in plants, and the effects of water deficits on plant processes. Assigned readings, reports, and lectures. Prerequisite: Botany 151 or equivalent. 3 s.h. (W) PROFESSOR KRAMER

255. TAXONOMY.—A study of the historical background of plant taxonomy, modern concepts and systems of classification, nomenclatorial problems and the taxonomy of specialized groups. Prerequisite: two years of botany, including Botany 52 or equivalent. 4 s.h. (W) ASSISTANT PROFESSOR WILBUR

256. COMMUNITY ANALYSIS AND CLASSIFICATION.—The development of concepts and methods in synecology leading to present applications of theory and field techniques. Prerequisite: Botany 156 or equivalent. 3 s.h. (E) PROFESSOR OOSTING

257. PRINCIPLES OF PLANT DISTRIBUTION.—Interpretations of floristic and ecological plant geography of world vegetation. Prerequisite: Botany 156 or equivalent. 3 s.h. (E) PROFESSOR BILLINGS

258. PHYSIOLOGY OF GROWTH AND DEVELOPMENT.—Consideration of the internal factors and processes leading to the production of new protoplasm and its differentiation at the cellular, tissue, and organ level in plants. Prerequisite: Botany 151 or equivalent; organic chemistry recommended. 3 s.h. (E) PROFESSOR NAYLOR

259. ENVIRONMENTAL MEASUREMENTS.—Methods of obtaining and evaluating climatological data for ecological purposes with special attention to instrumentation and microclimate. Prerequisite: Botany 151 and 156 or equivalent. 3 s.h. (E) PROFESSOR BILLINGS

260. LICHENS.—The morphology, systematics, and biological and ecological implications of the lichens. Collection and identification of specimens and the use of lichen chemistry in taxonomy. Prerequisite: Two semesters of botany. 2 s.h. (w) ASSISTANT PROFESSOR CULBERSON

FOREST BOTANY

223. FOREST PATHOLOGY.—Infectious and non-infectious diseases of forest trees, and related deterioration of forest products. Field and laboratory study of symptoms, etiology, and control. Prerequisite: Botany 1 and 2. 3 s.h. (w)
ASSOCIATE PROFESSOR JOHNSON

241. DENDROLOGY.—Nomenclature, classification, and identification of woody plants with special reference to species indigenous to southeastern United States and other important forest regions of temperate North America. Laboratory and field work. Prerequisite: one year of botany. 3 s.h. (w) PROFESSOR HARRAR

DEPARTMENTAL MAJOR

Prerequisites: Botany 1 and 2.

Major Requirements: A minimum of 21 hours (B.S., 24 hours) of work including at least eight hours from each of the two following groups of courses: Group 1—Botany 52, 104 and 156; Group 2—Botany 55, 101, 103, and 151. The remaining hours may be selected from these groups and any other courses in the Department for which the student is eligible, subject to the approval of the Departmental Adviser. All majors are expected to register for Senior Seminar for one semester of their senior year.

Related Work: Courses in at least two Natural Science Departments sufficient to total, with major work, 42 s.h. (B.S., 48 s.h.).

CHEMISTRY

PROFESSOR SAYLOR, CHAIRMAN; ASSOCIATE PROFESSOR WILDER, DIRECTOR OF UNDERGRADUATE STUDIES; PROFESSOR HILL, SUPERVISOR OF FRESHMAN INSTRUCTION; PROFESSORS BIGELOW, BRADSHER, BROWN, GLOCKER (VISITING LECTURER), GROSS, HAUSER, AND HOBBS; ASSOCIATE PROFESSORS KRIGBAUM AND STROBEL; ASSISTANT PROFESSORS POIRIER, QUIN, AND SMITH; DRS. BONK, JOHNSON, AND ASSISTANTS

1, 2. GENERAL INORGANIC CHEMISTRY.—Lectures and recitations on the elementary principles of chemistry and on the structure, properties, preparation and uses of the elements and their compounds. The laboratory work includes qualitative analysis of some of the more common metals. One lecture, two recitations, and three laboratory hours, throughout the year. Chemistry 1 is a prerequisite for Chemistry 2. 8 s.h. (w & e)
PROFESSORS HILL, BRADSHER, AND BROWN; ASSOCIATE PROFESSORS KRIGBAUM, STROBEL AND WILDER; ASSISTANT PROFESSORS POIRIER, QUINN, AND SMITH; DRS. BONK, JOHNSON, AND ASSISTANTS

42. INTRODUCTION TO CHEMICAL ANALYSIS.—A study of solutions of electrolytes with special reference to chemical equilibrium and chemical analysis. Laboratory experiments illustrate the principles of chemical equilibrium and the techniques of quantitative and semimicro qualitative analysis. Credit is not given for both 2 and 42 nor for both 42 and 61. One lecture, one recitation and six laboratory hours. Prerequisites: Permission of the Director of Undergraduate Studies, Chemistry 1, and Mathematics 22; the latter may be taken concurrently 4 s.h. (w) ASSOCIATE PROFESSORS WILDER AND STROBEL

NOTE: Two *mutually exclusive* chemistry sequences are provided on the freshman-sophomore level, (a) courses 1, 2 and 61 and (b) courses 1, 42, and 65. Courses 42 and 65 are open primarily to well-qualified B.S. science majors. Students interested in them should confer with the Director of Undergraduate Studies in Chemistry. Those selected for Chemistry 42 will normally be expected to continue with 65.

61. FUNDAMENTALS OF ANALYTICAL CHEMISTRY.—A study of the reactions of electrolytes in solution and of chemical equilibrium illustrated by labora-

tory experiments involving the techniques of gravimetric, volumetric, and colorimetric analysis. One lecture, one recitation, and six laboratory hours. Prerequisites: Chemistry 1, 2 and Mathematics 22 or equivalent. 4 s.h. (w)

PROFESSOR SAYLOR; ASSOCIATE PROFESSORS KRIGBAUM AND WILDER; ASSISTANT PROFESSORS POIRIER AND SMITH; DRS. BONK, JOHNSON, AND ASSISTANTS

65. INORGANIC CHEMISTRY.—A study of the more familiar elements and their compounds in the light of modern theories of valence and molecular structure. Three recitations. Prerequisite: Chemistry 42. 3 s.h. (w) DR. JOHNSON

70. QUANTITATIVE ANALYSIS.—A study of the theory and techniques of inorganic gravimetric and volumetric analysis. One lecture, one recitation, and six laboratory hours. Prerequisite: Chemistry 42 or 61. 4 s.h. (w)

PROFESSOR SAYLOR; ASSOCIATE PROFESSOR KRIGBAUM; ASSISTANT PROFESSORS POIRIER AND SMITH; DRS. BONK, JOHNSON, AND ASSISTANTS

132. QUANTITATIVE AND INSTRUMENTAL ANALYSIS.—Practice in advanced quantitative analysis and in the use of physical instruments in analysis with special attention to optical devices, together with a discussion of theoretical aspects. One lecture and six laboratory hours. Prerequisities: Chemistry 70 and one year of physics, the latter half of which may be taken concurrently. 3 s.h. (w)

DRS. BONK AND JOHNSON

151, 152. ORGANIC CHEMISTRY.—An introduction to the study of the compounds of carbon in which the chemistry of aliphatic and aromatic compounds is considered. Laboratory experiments are selected to illustrate the more important reactions and preparations of organic compounds. Two lectures, one recitation, and three laboratory hours. Prerequisite: Chemistry 61 or 65. Chemistry 151 is prerequisite for 152. 8 s.h. (w) PROFESSORS BIGELOW, BRADSHER, BROWN, AND HAUSER; ASSOCIATE PROFESSOR WILDER; ASSISTANT PROFESSOR QUIN; AND ASSISTANTS

206. ELEMENTS OF THEORETICAL CHEMISTRY.—A course in the general principles of physical chemistry for students who do not present credit in calculus. Credit is not given for both 206 and 261-262. Three recitation and three laboratory hours. Prerequisites: Chemistry 70, 152, Physics, 8 s.h., and Mathematics, 6 s.h. With the permission of the Director of Graduate Studies, graduate students from other departments may offer other advanced science courses in lieu of some of these prerequisites. 4 s.h. (w)

PROFESSOR SAYLOR AND ASSISTANT PROFESSOR POIRIER

215. ADVANCED INORGANIC CHEMISTRY.—A study of modern theories of valence and molecular structure and of inorganic compounds, particularly the less common types. Prerequisites: Chemistry 261-262 or 206. 3 s.h. (w)

PROFESSOR HILL

216. NUCLEAR CHEMISTRY.—Elementary theory of nuclear reactions, properties of isotopes, and tracer techniques. Two lecturers and three laboratory hours. Prerequisites: Chemistry 70, 152 and Physics 41-42. 3 s.h. (w)

PROFESSOR HILL AND DR. JOHNSON

234. CHEMICAL INSTRUMENTATION.—Discussion of physicochemical principles, as applied to instrumental methods of analysis, illustrated by laboratory experiments with emphasis on methods involving electrical techniques. One lecture and three laboratory hours. Prerequisites: Chemistry 70 and either 261-262 or 206; either of the latter may be taken concurrently. 2 s.h. (w)

ASSOCIATE PROFESSOR STROBEL

251. QUALITATIVE ORGANIC ANALYSIS.—Systematic identification of organic compounds, including a study of solubilities and classification reactions. One lecture and six laboratory hours. With permission of the Director of Graduate Studies, graduate students may take three hours of laboratory work instead of six and receive 2 semester hours credit. Prerequisites: Chemistry 70, 152. 3 s.h. (w)

PROFESSOR HAUSER

252. ADVANCED ORGANIC PREPARATIONS.—A laboratory course designed to supplement the student's knowledge of fundamental organic processes by a selected group of laboratory exercises accompanied by discussions of techniques and theories pertinent to the experiments. Five hours laboratory and lecture with lectures in alternate weeks. Prerequisite: Chemistry 70, 152. 2 s.h., (w)
PROFESSOR BROWN

261-262. PHYSICAL CHEMISTRY.—Fundamentals of general theoretical chemistry illustrated by selected laboratory experiments. Three recitations and three laboratory hours. Prerequisites: Chemistry 70, 152; Physics, 8 s.h.; and Mathematics 63 or equivalent. 8 s.h. (w) PROFESSOR HOBBS AND ASSISTANT PROFESSOR SMITH

271. INTRODUCTION TO RESEARCH.—Lectures on the use of chemical literature, research methods, recording and publication of results, and other topics. One lecture. 1 s.h. (w) PROFESSOR BROWN

275-276. RESEARCH.—The aim of this course is to give instruction in methods used in the investigation of original problems. It is open to seniors by permission of the Director of Undergraduate Studies. Nine hours a week and conferences. 1 to 6 s.h. (w) PROFESSORS BIGELOW, BRADSHER, BROWN, GROSS, HAUSER, HILL, HOBBS, AND SAYLOR; ASSOCIATE PROFESSORS KRIGBAUM, STROBEL, AND WILDER; ASSISTANT PROFESSORS POIRIER, QUIN, AND SMITH

DEPARTMENTAL MAJOR

A. For the degree of A.B.

Prerequisites: Chemistry 1, 2, Mathematics, 6 s.h.

Major Requirements: 22 s.h., including Chemistry 61, 70, 151, 152, and an additional 6 to 8 s.h., which may be satisfied by 261-262 or 206 together with 2 or 3 s.h. selected from courses 132, 216, 234, 251, and 252.

Related Work: 20 s.h., including Physics, 8 s.h., with the remainder usually in Botany, Geology, Mathematics, Physics or Zoology.

B. For the degree of B.S.

Prerequisites: Chemistry 1, 2 or 1, 42, Mathematics 6 s.h. Major Requirements: Chemistry 61 or 65, 70, 132, 151, 152, 251, 261-262, 216 or 234 or 252; also 271, if 65 is elected.

Related Work: 18 s.h., including Physics, 8 s.h., and Mathematics 63.

The language requirements must be satisfied by German and either French or Russian.

The Department offers work leading to graduation with distinction. Consult the section on Honors.

ECONOMICS AND BUSINESS ADMINISTRATION

PROFESSOR DEVYVER, CHAIRMAN; PROFESSOR LANDON, ACTING DIRECTOR OF UNDERGRADUATE STUDIES; PROFESSORS BLACK, CARTIER, HANNA, HOOVER, HUMPHREY, JOERG, RATCHFORD, SAVILLE, SIMMONS, SMITH, AND SPENGLER; VISITING LECTURER SCHWENNING; ASSOCIATE PROFESSORS DEWEY, DICKENS, AND SHIELDS; VISITING ASSOCIATE PROFESSOR CHIPMAN; ASSISTANT PROFESSORS FERGUSON, KELLER, KREPS, AND YOHE; VISITING ASSISTANT PROFESSORS BLACKBURN, DAVIES, GERHARD, GOODWIN, AND HAHN; INSTRUCTOR MR. FOLSOM; INSTRUCTORS (PART-TIME) MR. GALIFIANAKIS AND MR. STOWERS

The courses offered by the Department are listed under three divisions, Economics, Accounting, and Business Administration.

In general, the Economics courses aim to develop in the student such critical and analytical skills as underlie the ability to understand economic problems and institutions, both in their contemporary and in their historical setting. While no particular vocational or professional goal is emphasized, these courses furnish the academic background necessary for many positions in industry, for work in the

economic branches of government service, and for graduate study in economics and the social sciences.

Courses in Accounting and Business Administration, although more concerned with general principles than with specific applications, stress in greater measure than courses in Economics the knowledge and techniques useful to students definitely preparing for business careers. The student who majors in Accounting may elect courses in accountancy, business law, and related work, sufficient to qualify for admission to C.P.A. examinations.

Economics 51-52 must be passed by all students planning to elect further courses in Economics and Business Administration.

ECONOMICS

51-52. PRINCIPLES OF ECONOMICS.—6 s.h. (E & W) STAFF

Sections of Economics 51 will be offered during the spring semester, and sections of Economics 52 will be offered during the fall semester.

103. TRANSPORTATION.—Essential features, problems, and competitive positions of rail, highway, air, and inland-water transportation, with most emphasis on rail transportation. Special attention is given to the economic significance of transportation, and to cost factors, rates and their economic effects and regulations 3 s.h. (W) PROFESSOR LANDON

132. THE ECONOMIC HISTORY OF THE UNITED STATES.—Development of economic institutions as the United States passed from a wilderness area to an industrial society. Special attention is given to measures of economic change and their application to models of economic growth and fluctuation. 3 s.h. (W)

PROFESSOR SAVILLE; VISITING ASSISTANT PROFESSOR DAVIES

149. INTERMEDIATE ECONOMICS.—This course develops methods of economic analysis beyond the principles level. Major emphasis is laid on the determination of price and distribution of income. These problems are studied in the context of both competitive and monopolistic market structures. 3 s.h. (W) STAFF

152. GLOBAL GEOGRAPHY.—The subject matter involves resources patterns and world affairs, geonomic problems, geocultural problems, and geographic factors affecting geopolitical questions. 3 s.h. (E) PROFESSOR LANDON

153. MONEY, CREDIT AND BANKING.—This course begins with a study of the nature, characteristics, and functions of money, credit, and the commercial banking system. It covers also the history of commercial banking in the United States; the foundation, organization, and functions of the Federal Reserve System; the supervision and control of commercial banks; deposit insurance; and the value of money. 3 s.h. (W)

PROFESSORS SIMMONS AND RATCHFORD; ASSISTANT PROFESSOR YOHE

155. LABOR PROBLEMS.—An examination of present-day labor problems followed by an intensive study of methods used by employers and workers in meeting those problems. 3 s.h. (W) PROFESSOR DEVYVER; ASSISTANT PROFESSOR KREPS; VISITING ASSISTANT PROFESSOR DAVIES

161. EUROPEAN ECONOMIC PROBLEMS.—This course deals with the losses and economic dislocations of the war, the problem of developing a new pattern of intra-European and world trade, the effort to stabilize prices and to establish a Common Market and proposed Free Trade Area. 3 s.h. (W)

PROFESSOR HUMPHREY; VISITING ASSISTANT PROFESSOR GERHARD

169. ECONOMICS OF CONSUMPTION.—Economic problems of the family. Factors determining choice; commercial and legal standards for consumer's goods; consumer credit and co-operation; income and standards of living. 3 s.h. (W)

ASSISTANT PROFESSOR KREPS

186. LATIN AMERICAN ECONOMICS.—A survey of the problems of economic development in twenty countries. 3 s.h. (W) PROFESSOR SMITH

187. PUBLIC FINANCE.—This is a general course in the principles of public finance. It covers the constitutional, economic, and administrative aspects of public

revenues, public expenditures, public debts, and intergovernmental fiscal relations. Special attention is given to current trends and problems. 3 s.h. (w)
PROFESSOR RATCHFORD

189. BUSINESS AND GOVERNMENT.—A survey of the public policies which most directly affect the operation of competition in the business world. The course considers the leading philosophies of public control and economic development, the validity of their presuppositions, and their influence on legislation, court decisions and administrative law. 3 s.h. (w) ASSOCIATE PROFESSOR DEWEY

193. ECONOMIC SYSTEMS.—A study of alternative economic systems. An historical and analytical study of the basic elements of capitalism and of collectivist types of economic systems. Particular attention is given to an analysis of the economic system of Soviet Russia. Prerequisite: permission of the department. 3 s.h. (w) PROFESSOR HOOVER
[Not offered 1960-61]

194. ECONOMIC FUNCTIONS OF THE STATE.—A continuation of Economics 193. A consideration of the economic functions of society and of the constrasting roles of the state in the various economic systems in carrying on these functions. The Nazi system, the quasisocialized economics of Europe, as well as the modifications of old-style capitalism in the United States are analyzed. Prerequisite: Economics 193. 3 s.h. (w) PROFESSOR HOOVER
[Not offered 1960-61]

201. SENIOR SEMINAR IN ECONOMICS.—Problems in theory and applied economics. Readings, reports, and discussion of selected topics. For majors in Economics, with consent of the Department. 3 s.h. (w) STAFF

204. ADVANCED MONEY AND BANKING.—Monetary theory and its statistical and institutional implementation. Particular attention is given to the development of aggregative theories of prices, interest rates and production; the functioning of monetary policy within various theoretical frameworks; and appraisal of the recent use and the limitations of Federal Reserve policy. 3 s.h. (w)
ASSISTANT PROFESSOR YOHE

217. POPULATION PROBLEMS AND RESOURCES.—Survey of population theory and policy. Study of national and international trends in population—growth and resource-use, together with analyses of their economic and social implications. 3 s.h. (w) PROFESSOR SPENGLER

218. BUSINESS CYCLES.—A study of the various types of cyclical movements in industry, with special emphasis on cycle theory and methods of controlling or modifying business cycles. 3 s.h. (w)
PROFESSOR HUMPHREY; VISITING ASSISTANT PROFESSOR GERHARD

219. ECONOMIC PROBLEMS OF UNDER-DEVELOPED AREAS.—Consideration and analysis of the economic and related problems of under-developed countries. Some attention will be given to national and international programs designed to accelerate the solution of these problems. 3 s.h. (w) PROFESSOR SPENGLER

231. ECONOMIC HISTORY OF EUROPE.—The economic development of Europe from medieval times to the present, treating such topics as the guilds, mercantilism, money, banking, crises, the Industrial Revolution, the interrelationships of government and business, and the economic consequences of war. 3 s.h. (w)
PROFESSOR SMITH

233. STATE AND LOCAL FINANCE.—A study of expenditures, taxation, and financial administration in state and local governments with emphasis on current problems. Special attention will be given to research methods and materials and to the financial relations between state and local governments. Prerequisite: Economics 187 or consent of instructor. 3 s.h. (w) PROFESSOR RATCHFORD

237-238. STATISTICAL METHODS.—A study of statistical methods appropriate for dealing with problems in business and social sciences. In addition to developing more thoroughly the subjects considered in *Business Statistics,* the following methods will be considered: simple, multiple, partial, and curvilinear correlation;

curve fitting; probability; sampling distributions; and statistical inference. Prerequisite: Economics 138 or consent of the instructor. Either semester may be taken for credit. 6 s.h. (w) PROFESSOR HANNA

240. NATIONAL INCOME.—A critical survey of the conceptual framework and structure of national income and its components, the reliability of national income estimates, and their use in analyzing questions of economic policy. Prerequisite: Economics 138 or consent of the instructor. 3 s.h. (w)
PROFESSOR HANNA

[Not offered 1960-61]

243. MATHEMATICAL ECONOMICS.—A systematic survey of mathematical economic theory. The principal topics are vector spaces and matrices, macrostatics, especially input-output systems, and microstatics, especially models of the firm employing game theory and activity analysis. 3 s.h. (w)
ASSISTANT PROFESSOR FERGUSON; VISITING ASSOCIATE PROFESSOR CHIPMAN

244. INTRODUCTION TO ECONOMETRICS.—The implementation of economic theory by statistical testing and estimation. The course is composed of lectures on statistical theory for linear systems and of a workshop in applied econometrics. Data processing and programming for digital computor is studied, and the class participates in solution of a problem by use of computor. Prerequisite: Mathematics 221 and the consent of the instructor. 3 s.h. (w)
ASSISTANT PROFESSOR FERGUSON

256. LABOR LEGISLATION AND SOCIAL INSURANCE.—A study of the relations of the state to labor problems with special reference to remedial legislation, to interference in labor disputes, and to social insurance. Prerequisite: Economics 155 or with the consent of the instructor. 3 s.h. (w) PROFESSOR DE VYVER
[Not offered 1960-61]

257. DYNAMICS OF THE LABOR MOVEMENT.—A study of the forces which have shaped the growth of the labor movement. Special emphasis on the origin of modern trade unionism, relating its growth with western philosophic developments, and with the changing economic and social structure of society in Europe and America. 3 s.h. (w) PROFESSOR CARTTER

262. TRADE UNIONISM AND COLLECTIVE BARGAINING.—An intensive survey of the trade union as an economic institution is followed by a study of the principles and problems of union-management relationship as found in collective bargaining. Prerequisite: Economics 155 or equivalent. 3 s.h. (w)
PROFESSOR DE VYVER

265. INTERNATIONAL TRADE AND FINANCE.—A study of the fundamental principles of international trade and foreign exchange. Subjects covered will include international specialization, balance of payments, foreign investments, tariffs and commercial policies, exchange control, exchange rates, and international monetary problems. 3 s.h. (w)
PROFESSOR HUMPHREY; VISITING ASSISTANT PROFESSOR GERHARD

268. COMPETITION AND MONOPOLY.—A detailed study of the varieties of imperfectly competitive markets, the economic and legal issues which they raise, and the policy solutions which have been attempted in the United States. 3 s.h. (w) ASSOCIATE PROFESSOR DEWEY

ACCOUNTING

57-58. PRINCIPLES OF ACCOUNTING.—Principles of single proprietorship, partnership, and corporate accounting. Designed to give the student some insight into accounting techniques and an understanding of financial statements, their preparation and interpretation. Supervised laboratory attendance optional. 6 s.h. (w) STAFF

60. GENERAL ACCOUNTING.—A one semester course in accounting principles designed for economics majors and other non-business administration students who desire some understanding of basic accounting concepts. This course must be taken

in the sophomore or junior year. Students may not receive credit for both Course 60 and Course 57-58. 3 s.h. (w)

PROFESSOR LANDON; ASSOCIATE PROFESSOR DICKENS; VISITING ASSISTANT PROFESSOR BLACKBURN

147. ACCOUNTING FOR CONTROL.—This course traces the ways and means of executive control through statistics and industrial accounting. Emphasis is placed upon controlling business enterprises through cost accounting, financial reports, and other techniques. This course is not open to accounting majors. Prerequisite: Economics 57-58. 3 s.h. (w) PROFESSORS BLACK AND JOERG

171-172. ADVANCED ACCOUNTING.—Advanced accounting theory and practice applied to the managerial problems of valuation and operation in corporations, consolidations, mergers, and liquidations. Open to students who have completed Economics 57-58. 6 s.h. (w)

ASSOCIATE PROFESSOR SHIELDS; ASSISTANT PROFESSER KELLER

173-174. AUDITING, THEORY AND PRACTICE.—This course is primarily concerned with preparing the student to enter public accounting practice, but some attention is given to internal auditing. During the first semester, auditing techniques and methods are studied through the use of an audit practice set. The work of the second semester deals with matters of auditing and accounting policy examined from the standpoints of the supervising accountant, the business manager, and the investor. Prerequisite: Economics 171-172 and the permission of the department. 6 s.h. (w) ASSOCIATE PROFESSOR DICKENS

175-176. C.P.A. REVIEW.—Thorough practice in classroom to prepare candidates for the Certified Public Accountant examination. The object is to train students to apply accounting principles and to work in classroom under substantially the same conditions as in the examination room. Practical accounting problems, auditing analysis and theory of accounts. Prerequisite: Economics 171-172 and permission of the department. 6 s.h. (w) PROFESSOR BLACK

Those who do not wish credit may take Economics 175-176 for $25.00 per semester.

177. INCOME TAX ACCOUNTING.—A study of the accounting principles involved in the management of business enterprise under the requirements of Federal income tax laws. Practice is given in the preparation of tax returns. Prerequisite: Economics 171-172 or permission of the instructor. 3 s.h. (w)

ASSOCIATE PROFESSOR SHIELDS

178. ACCOUNTING SYSTEMS.—A presentation of the design and use of basic accounting procedures as applied to specialized business needs. Field trips to selected business units will be arranged. Prerequisite: Economics 171-172 and the permission of the department. 3 s.h. (w) ASSOCIATE PROFESSOR DICKENS

180. GOVERNMENT ACCOUNTING.—Accounting principles and methods used in the control and administration of governmental units. Emphasis is placed upon state, county, and municipal governments. Prerequisite: Economics 57-58 and permission of the instructor. 3 s.h. (w) ASSOCIATE PROFESSOR SHIELDS

[Not offered 1960-61]

275-276. ADVANCED INDUSTRIAL ACCOUNTING AND MANAGEMENT.—A comprehensive examination of the rationale and techniques of control methods used in industry. Emphasis is laid on a critical evaluation of the practices followed by job-order, process, and standard costing as well as the economics of overhead costs. Prerequisites: Economics 171-172 and permission of the department. 6 s.h. (w) PROFESSOR BLACK

BUSINESS ADMINISTRATION

11. ECONOMIC GEOGRAPHY.—A course in regional economic geography embracing the study of the world's major geographic regions, their present and potential production of food and raw materials for manufacture, and the relationship between these factors and the development of manufacturing industries, cities, and commerce. Offered both semesters. 3 s.h. (E & W)

[Not offered 1960-61]

105. INDUSTRIAL MANAGEMENT.—This course deals primarily with the elements and problems of managing the operations of an industrial firm. Topics treated include the functions and responsibilities of management, qualities required in executives, organization, location, the physical plant, materials control, the planning and control of operations, industrial and market research, personnel, budgeting, purchasing, and records and reports. Offered both semesters. 3 s.h. (W)
PROFESSOR LANDON; VISITING ASSISTANT PROFESSOR HAHN; VISITING LECTURER SCHWENNING

109. THE ECONOMIC GEOGRAPHY OF LATIN AMERICA.—This course involves comprehensive study of the resources and people of Mexico, the West Indies, and Central and South America. Special emphasis is placed upon the possibilities and limitations of increases in trade between the United States and the leading Latin-American countries. Prerequisite: Economics 51-52 or permission of the department. 3 s.h. (E)

115. FUNDAMENTALS OF GEOGRAPHY.—A study of geographic influences consisting of location, maps and their interpretation, climate, topography, soils, minerals, bodies of water, plants, animals, and the works of man. This course is required of all students in the Elementary School Teaching program, and is also recommended for those intending to specialize in foreign trade or the diplomatic service. Prerequisite: Economics 51-52 or permission of the department. 3 s.h. (E)
PROFESSOR LANDON; MR. STOWERS

120. ECONOMIC GEOGRAPHY OF THE PACIFIC.—An analysis of the physical influences, natural resources and economic activities of the Orient. Prerequisite: Economics 51-52 or permission of the department. 3 s.h. (E)
PROFESSOR TUTHILL

138. BUSINESS STATISTICS.—A survey of the principal statistical methods and their application to economics and business administration. The course deals with collection of statistical data, construction of statistical tables and charts, and a brief study of the fundamental statistical concepts and techniques. Offered both semesters. 3 s.h. (W) PROFESSOR HANNA; ASSISTANT PROFESSOR FERGUSON
Open to juniors and to sophomores in the second semester. Not open to seniors except with the permission of the Director of Undergraduate Studies.

143. CORPORATION FINANCE.—Principles and problems in the financial organization of corporations; the study of corporate securities, the management of capital, the distribution of earnings; industrial combinations; insolvency and reorganization. Prerequisite: Economics 57-58, Principles of Accounting, or Economics 60, General Accounting. Offered both semesters. 3 s.h. (W)
PROFESSOR JOERG; ASSISTANT PROFESSOR KELLER; VISITING ASSISTANT PROFESSOR HAHN

144. INVESTMENTS.—A study of the investment policies of individuals and institutions; the securities markets; sources of investment information and data; the analysis and interpretation of financial statements. Prerequisites: Economics 57-58 or 60, and 143. 3 s.h. (W) PROFESSOR JOERG; ASSISTANT PROFESSOR KELLER

158. INSURANCE.—Institutions, practices, and theories relating to the transfer of risks. Consideration is given to policy provisions, rate structures, carrier organization, government regulation, and the investment problems. Planning to minimize the effect of risks on individuals, firms, and the economy is emphasized. 3 s.h. (W)
PROFESSOR SAVILLE

168. MARKETING.—The topics covered in this course include the economic importance of markets and the marketing system; marketing functions; organization, and methods, price policies; finance; speculation; market research and planning of marketing activities; co-operative marketing; criticism of marketing and means for improvement; and regulation. 3 s.h. (W)
PROFESSOR LANDON; MR. FOLSOM

181. BUSINESS LAW.—The fundamental principles of law as applied to routine business transactions. The topics presented are: contracts, agency, and negotiable instruments. 3 s.h. (W)
VISITING ASSISTANT PROFESSOR BLACKBURN; MR. GALIFIANAKIS

182. BUSINESS LAW.—A continuation of 181. The topics presented are: partnerships, corporation, sales, personal and real property, mortgages, suretyship, bankruptcy and trade regulation. 3 s.h. (w)
VISITING ASSISTANT PROFESSOR BLACKBURN; MR. GALIFIANAKIS

184. COMMERCIAL LAW FOR ACCOUNTANTS.—A review and summation of commercial law principles as they apply to accounting theory and practice. Emphasis will be placed upon the commercial law sections of the Certified Public Accountant examinations. Students are admitted to the course by permission of the instructor. *For seniors.* 3 s.h. (w) PROFESSOR BLACK

188. PERSONNEL MANAGEMENT.—A study of the fundamental principles and problems of labor management and of collective bargaining under modern industrial conditions and under existing labor legislation. 3 s.h. (w)
PROFESSOR DE VYVER

191. BUSINESS POLICY.—An integrating course where, through analysis of a series of case problems from the top management viewpoint, the student is given practice in arriving at effective courses of action to solve business problems. To complete this course satisfactorily the student will be required to draw upon the institutional knowledge and techniques acquired in the other courses in the department. Prerequisites: Business Administration requirements through the junior year. 3 s.h. (w) STAFF

DEPARTMENTAL MAJORS

1. ECONOMICS

A. *Prerequisites:*

1. Mathematics 21.
2. Economics 51-52.

B. *Number of hours needed:* 24 hours in addition to Economics 51-52.

1. Required courses—Economics 149
   Economics 153
2. Electives—18 semester hours of work in Economics (not Accounting or Business Administration) of which 9 semester hours shall be advanced courses in the Department.

C. *Related Work:*

1. Number of hours needed: 18 hours.
2. Required courses: one of the following—

Economics 57–58	Principles of Accounting
Economics 60	General Accounting
Economics 138	Business Statistics

3. Departments in which related work is usually taken: Mathematics, Psychology, the social sciences, and Business Administration. In special cases courses taken in other departments may be counted as related work with the approval of the department and the dean.

2. ACCOUNTING

The complete program of study listed under the heading Accounting must be completed for the Accounting Major.

3. BUSINESS ADMINISTRATION

The complete program of study listed under the heading Business must be completed in the indicated sequence for the Business Administration major.

The Department offers work leading to graduation with distinction. See the section on Honors.

EDUCATION

PROFESSOR CARTWRIGHT, CHAIRMAN; ASSOCIATE PROFESSOR GEHMAN, DIRECTOR OF UNDERGRADUATE STUDIES; PROFESSORS BOLMEIER, CARR, AND HURLBURT; ASSOCIATE PROFESSORS COLVER, PETTY, RUDISILL, STUMPF, AND WEITZ; ASSISTANT PROFESSORS DUNNING, PALACIOS, AND JOHNSON

Courses in the Department of Education are designed for two groups of students: (1) students with teaching experience or others who have definitely chosen teaching as their lifework, and (2) students who desire to study the school as an outstanding social institution.

Students who do not expect to teach but merely desire an understanding of the school as part of a liberal education are advised to elect such courses as 54 and 104 for their introductory work in the Department and then to elect further work in accordance with their special interests. Students who expect to teach in the public schools should plan their courses in accordance with the general regulations set forth under Teaching. *Students who intend to teach in elementary school should confer with Professors Carr or Petty, and students who intend to teach in secondary school should confer with Professors Dunning or Hurlburt. Students should confer with their advisers prior to registration each semester.*

1. ORIENTATION IN STUDY AND STUDY HABITS.—A course for freshmen whose high-school and other records indicate the need for help in working out satisfactory study methods and in adjusting to college life. Note-taking from reading and lectures, time planning, remedial reading, and pertinent principles of the psychology of learning are among the matters considered. *Either semester.* 3 s.h. (W) [Not offered in 1960-61.]

5. DEVELOPMENTAL READING.—A course consisting of study and practice for the improvement of the reading and study skills. Work is provided in such areas as vocabulary, speed of comprehension, critical interpretation, organization of ideas, and versatility of method in reading for different purposes. 3 s.h. (W)
ASSOCIATE PROFESSOR RUDISILL

54. HISTORY OF AMERICAN EDUCATION.—A study of American education from colonial times to the present. The development of schools, their organization, administration, curriculum, and methods as seen in relation to the social forces that have produced our particular type of civilization. 3 s.h. (E)
ASSISTANT PROFESSOR JOHNSON

68. MENTAL HYGIENE.—Development and application of psychological principles of adjustment to personal behavior. Study of factors in the development of personal adjustment as influenced by human relations in the the home, school, and community. Not open to students who have had Psychology 116. 3 s.h. (E)
ASSOCIATE PROFESSOR GEHMAN

101-102. ELEMENTARY EDUCATION: PRINCIPLES AND PRACTICE.—The study of the nature, subject matter, and methods of elementary education. The course is designed to give prospective elementary teachers an understanding of basic principles and practices in the organization of instruction and of subject matter for the primary and grammar grades of the public school. Students may elect primary or grammar-grade work, according to their special interests. The specific problems which arise in the student teachers' experiences are treated in group and individual conferences. Prerequisite: 2.0 average over-all and in the major. 9 s.h. (E)
PROFESSOR CARR; ASSOCIATE PROFESSOR PETTY

NOTE: Education 101-102, 103, and 118 constitute a semester's work during the senior year.

103. ORGANIZATION AND MANAGEMENT OF THE SCHOOL.—An introduction to the problems of school organization and administration which are of particular concern to the classroom teacher. Although federal and state control over education is briefly reviewed, the main consideration is the local school system. Considerable attention is given to the administration of teaching personnel, pupil personnel, and the program of studies. *Either semester.* 3 s.h. (E)
PROFESSORS BOLMEIER AND HURLBURT; ASSOCIATE PROFESSOR STUMPF

See notes following courses 101-102, 215, 216.

104. HISTORY OF EDUCATION IN EUROPEAN CULTURE.—A study of the evolution of educational theory and practice from Greek civilization through 19th-century Europe. Emphasis will be placed upon the educational ideas of outstanding thinkers from Plato to Spencer. 3 s.h. (E) ASSISTANT PROFESSOR JOHNSON

118. EDUCATIONAL PSYCHOLOGY.—A study of psychology of learning; individual and social development; and psychology of adjustment, as related to problems of instruction and the processes of education. Prerequisite: Psychology 91. 3 s.h. (E) ASSOCIATE PROFESSOR GEHMAN; ASSISTANT PROFESSOR PALACIOS
See notes following courses 101-102, 215-216.

142. CHILDREN'S LITERATURE.—Students enrolled will be allowed to specialize in literature of either the primary or the grammar grades. 3 s.h. (E)
PROFESSOR CARR; ASSOCIATE PROFESSOR RUDISILL

161. INTEGRATED ART IN THE PUBLIC SCHOOL.—Work in materials and methods as applied in two dimensional art. (Required of all students intending to teach in the elementary school.) 3 s.h. (E) MR. STARS

162. PLASTIC ART IN THE PUBLIC SCHOOL.—Work in basic three dimensional art, giving an understanding of different sculptural media with special emphasis on ceramics. The course is designed for students in elementary and secondary art education, and will provide credit toward the North Carolina Elementary and Secondary Teaching Certificates. 3 s.h. (E) MR. STARS

164. VOCAL MUSIC IN THE PUBLIC SCHOOL.—Materials and methods of teaching vocal music in the junior and senior high schools; emphasis on organization, administration, and performance of school choirs and ensembles; care of the changing voice. 3 s.h. (E) ASSOCIATE PROFESSOR SAVILLE

166. INSTRUMENTAL MUSIC IN THE PUBLIC SCHOOL.—Materials and methods of teaching instrumental music in the junior and senior high schools; emphasis on teaching technics, repertoire, organization, and administration of the instrumental curriculum. 3 s.h. (E) PROFESSOR BONE

201. TEACHING AND SUPERVISION OF ARITHMETIC.—Special attention is given to the number system, the fundamental operations (with whole numbers, fractions, and decimals), percentage, and measurements. Considered also are the meaning theory, methods of teaching, problem solving, evaluation, practice and drill, and selection and gradation of arithmetical contents. This course is designed for teachers and supervisors in the elementary school. 3 s.h. (E)
ASSOCIATE PROFESSOR PETTY

203. PRINCIPLES OF SCHOOL ADMINISTRATION.—The fundamental facts and procedures of school administration, an analysis of the problems and policies of the organization and direction of a local school system, and the functions of the various school officials. Prerequisite: six semester hours in education. 3 s.h. (E)
PROFESSORS BOLMEIER AND HURLBURT;
ASSOCIATE PROFESSOR STUMPF

204. THE SCHOOL AS AN INSTITUTION.—Consideration is given to the place of the school in the American social order, and its adaptation to social, economic, and political changes. Special attention is directed to the responsibility (1) of the school for seeking solutions to the perplexing problems of youth created by a changing society; and (2) of the government for providing greater equality of educational opportunities. 3 s.h. (E) PROFESSOR BOLMEIER

210. INTRODUCTION TO EDUCATIONAL RESEARCH.—The general purpose of this course is to give the student an overview of research, acquaint him with the nature of research processes, and develop within him an understanding of the essential characteristics of good research work. The course is designed to be liberalizing as well as technical. 3 s.h. (E) ASSOCIATE PROFESSOR STUMPF

215. SECONDARY EDUCATION: PRINCIPLES.—Intensive study of principles, curriculum, and methods in secondary education. Accelerated course meeting six hours a week for half a semester. Prerequisite: 2.0 average over-all and in teaching

field or fields. Must be accompanied by Education 216. Either semester. 3 s.h. (E)
PROFESSORS CARTWRIGHT AND HURLBURT; ASSISTANT PROFESSOR DUNNING

216. SECONDARY EDUCATION: INTERNSHIP.—Supervised internship in junior or senior high schools. Full-time observation and teaching for half a semester, accompanied by Education 215. Either semester. 6 s.h. (E)
PROFESSORS CARTWRIGHT AND HURLBURT; ASSISTANT PROFESSOR DUNNING

Note: Education 215, 216, 103, and 118 constitute a semester's work during the senior year.

217. THE PSYCHOLOGICAL PRINCIPLES OF EDUCATION.—An advanced study of teaching, learning, and the learner. Selected problems guiding the reading of students will be discussed in class. 3 s.h. (E)
ASSOCIATE PROFESSORS GEHMAN AND WEITZ

224. TEACHING THE SOCIAL STUDIES IN ELEMENTARY SCHOOLS.—This course treats objectives, curriculum trends, methods, and materials in elementary-school social studies. Topics receiving emphasis include unit-planning, use of textbook, the reading program, the using of community resources, audio-visual materials, dealing with controversial issues, teaching time and place concepts, and evolution. Opportunity is provided for teachers to work on their own school problems in the social studies. 3 s.h. (E) PROFESSOR CARTWRIGHT

225. THE TEACHING OF HISTORY AND THE SOCIAL STUDIES.—Evaluation of the objectives, content, materials and methods in the teaching of history and the social studies. 3 s.h. (E) PROFESSOR CARTWRIGHT

226. TEACHING READING IN THE ELEMENTARY SCHOOL.—A study of the nature of the reading process and of principles, methods and materials for the development of effective reading attitudes and skills as applied both to developmental and remedial programs. Practice is provided with elementary-school children suffering reading retardation, in testing, diagnosis, and daily remedial teaching. 3 s.h. (E) ASSOCIATE PROFESSOR RUDISILL

228. IMPROVEMENT OF INSTRUCTION IN THE SOCIAL STUDIES.—An advanced treatment of curriculum, methods, and materials in the social studies. Individuals will concentrate on subjects and grade levels of their choice. 3 s.h. (E)
PROFESSOR CARTWRIGHT

232. SUPERVISION OF INSTRUCTION.—A survey of supervision as a means of improving instructing and adapting the curriculum to the learner and to community needs. 3 s.h. (E) PROFESSOR CARR

234. SECONDARY-SCHOOL ORGANIZATION AND ADMINISTRATION.—This course is designed especially for principals, teachers, and other prospective members of the secondary-school staff. The scope of secondary education is considered to encompass junior high school, regular high school, senior high, and junior college. Special treatment is given to the problems of internal organization and management. 3 s.h. (E) PROFESSOR BOLMEIER

235. THE NATURE, FUNCTION, AND REORGANIZATION OF THE CURRICULUM.—Selected problems guiding the reading of students. 3 s.h. (E)
PROFESSORS CARR AND CARTWRIGHT

236. TEACHING READING IN THE SECONDARY SCHOOL.—A study of the nature of the reading process and of principles, methods, and materials for the development of effective reading attitudes and skills as applied both to developmental and remedial programs. Practice is provided with secondary-school children suffering reading retardation, in testing, diagnosis, and daily remedial teaching. For secondary-school teachers of all subjects who wish to improve the reading and study habits of their students. 3 s.h. (E) ASSOCIATE PROFESSOR RUDISILL

237. LITERATURE FOR ADOLESCENTS.—This course offers a critical survey of literature written for, or appropriate for junior and senior high school students. Fiction, non-fiction, biography, poetry, and drama are examined. Both adult and

transition-type literature are considered. Methods of organizing the program in literature are explored. 3 s.h. ASSISTANT PROFESSOR DUNNING

239. METHODS AND PROBLEMS OF TEACHING ENGLISH IN SECONDARY SCHOOLS.—This course will present sound methods of teaching the reading of literature and other forms of writing, language, grammar and composition. Materials will include selections found in widely adopted textbooks, numerous specimen themes for grading, and current books and articles in the field. Several short compositions and a report will be required. 3 s.h. (E)
ASSISTANT PROFESSOR DUNNING AND ASSOCIATE PROFESSOR BOWMAN

240. EDUCATIONAL AND OCCUPATIONAL INFORMATION.—A study of the sources of occupational and educational information: methods of securing and organizing occupational information; methods of providing vocational and educational information to students through career days, college conferences, class activities, and individual counseling; methods of making job analyses and community occupational surveys. 3 s.h. (W) ASSOCIATE PROFESSOR COLVER

241. PRINCIPLES OF GUIDANCE.—An historical survey of the philosophies of guidance; a study of the interrelationships between instruction, administration, and guidance in education. Prerequisite: 6 hours of psychology or educational psychology. 3 s.h. (W) ASSOCIATE PROFESSOR COLVER

243. PERSONALITY DYNAMICS.—A study of personality structure and dynamics with emphasis upon the implications for counseling and instruction. Prerequisite: 6 hours of psychology or educational psychology. 3 s.h. (E)
ASSOCIATE PROFESSOR GEHMAN

246. THE TEACHING OF MATHEMATICS.—This course deals with such topics as aims, curriculum, course and lesson planning, and classroom procedure for teaching secondary-school mathematics. 3 s.h. (E) ASSISTANT PROFESSOR REYNOLDS

253. SCHOOL LAW.—The primary purpose of this course is to familiarize prospective school administrators and teachers with the legal features of school organization and administration. Although some attention is given to constitutional and statutory provisions, the main emphasis is upon court decisions relating to education. Students are expected to select appropriate problems in school law for intensive study. 3 s.h. (E) PROFESSOR BOLMEIER

258. EDUCATIONAL MEASUREMENTS.—A critical study of the principles and techniques involved in measurement in education with opportunity for individual research. Prerequisite: 12 semester hours in the Department, including a course in educational psychology. 3 s.h. (E) ASSOCIATE PROFESSOR WEITZ

266. SCIENCE IN THE ELEMENTARY SCHOOL.—Presentation of basic concepts in natural and physical science through selected readings, the use of simple experiments and demonstrations, construction and use of equipment, and field studies. 3 s.h. (E) ASSISTANT PROFESSOR REYNOLDS

276. THE TEACHING OF HIGH-SCHOOL SCIENCE.—Discussion, lectures and collateral reading, related to such topics as aims, tests, curriculum, classroom and laboratory procedure, field trips, course and lesson planning for secondary-school science. 3 s.h. (E) ASSISTANT PROFESSOR REYNOLDS

290. ADMINISTRATION OF SCHOOL PROPERTY.—Planning and management of the school plant and its equipment to meet instructional, health, and community needs for immediate and long-range purposes. This course is intended for teachers and principals as well as for superintendents. Areas to be treated include site selection; trends in design, lighting, ventilation and heating; custodial service and maintenance; and financing. 3 s.h. (E) ASSOCIATE PROFESSOR STUMPF

DEPARTMENTAL MAJOR

Major Requirements: Number of hours needed: 24 hours in the Department, including 6 hours in senior-graduate courses.

Related Work: Sufficient work in subjects to be taught to meet certification requirements in state in which student intends to teach.

The Department offers work leading to graduation with distinction. See the section on Honors.

MATERIALS AND METHODS COURSES

Certain courses concerned with materials and methods in teaching the various subjects in the public school curriculum are listed in the proper subject matter department. These courses are intended to give credit on teaching certificates and are recommended by the Department of Education for such credit.

SCIENCE EDUCATION MAJOR

Students desiring to teach science in secondary schools should read the description of this program of study listed under the heading Science Education Major.

ENGLISH

PROFESSOR TURNER, CHAIRMAN; ASSISTANT PROFESSOR BUDD, DIRECTOR OF UNDERGRADUATE STUDIES; ASSOCIATE PROFESSOR PATTON, SUPERVISOR OF FRESHMAN INSTRUCTION; PROFESSORS BEVINGTON, BLACKBURN, BOYCE, BRINKLEY, FENTON, FISHER, GOHDES, SANDERS, STEVENSON, AND WARD; ASSOCIATE PROFESSORS BEVINGTON, BOWMAN, BRYANT, HARWELL, REARDON, AND WETHERBY; ASSISTANT PROFESSORS ANDERSON, FERGUSON, HENINGER, JORDAN, MICHALAK, POTEAT, SCHWERMAN, SMITH, AND WILLIAMS; DR. RANDALL; MMES. ANDERSON, KASKE, AND WETHERBY; MISSES HESTER AND PENNINGER; MESSRS. APPLEWHITE, BOATWRIGHT, BURWELL, CANINE, CARRITHERS, CHARD, CLUGSTON, COMBS, DORRIS, GARRISON, HALLORAN, HARGREAVES, HOOK, HOYLE, HURLEY, KOPPENHAVER, LOGAN, MCCELVEY, MOREY, PRICE, QUAINTANCE, SAYRE, SKIPP, SPEAKS, ZIMMERMAN

1-2. FRESHMAN COMPOSITION.—Training in composition through the writing of weekly expository themes. The theme subjects derive from assigned reading drawn from British and American literature of the 20th Century. English 1 takes up the Essay, the Short Story, and the Novel; English 2, the Play and the Poem. The student attends each week (1) a general lecture on the reading for the week; (2) a section meeting, where the instructor and the students as a group discuss problems of composition and literature; and (3) an individual conference in which the instructor reads and grades the weekly theme and makes special assignments according to the needs of the student.

33. WRITING LABORATORY.—A non-credit course in elementary composition which may be elected by students who need it, or may be required of certain students under the conditions stated on page 31, "Deficiencies in Composition." (E)

53. ENGLISH COMPOSITION.—A course in advanced composition and grammar. Emphasis is placed first on the student's mastering the fundamental principles of English grammar and the other essentials of correct writing. 3 s.h. (E)
ASSISTANT PROFESSOR JORDAN

65-66. ENGLISH COMPOSITION.—A foundation course in imaginative writing, both prose and verse. Open to sophomores and in special cases to freshmen. The consent of the instructor is required. 6 s.h. (E) PROFESSOR SANDERS

E93. WRITTEN AND ORAL COMMUNICATION FOR ENGINEERS.—Emphasis will be placed on the writing of business letters, technical reports, and articles for submission to technical journals. Approximately one-third of the course will provide training in the oral presentation of various materials. Prerequisite: English 1 and 2. 3 s.h. (W) ASSOCIATE PROFESSOR HARWELL AND STAFF

101. EXPOSITORY ENGLISH COMPOSITION.—Designed for students interested in expository writing, this is a course in advanced composition. Primarily for juniors and seniors; open also to sophomores approved by the instructor. 3 s.h. (E) ASSISTANT PROFESSOR FERGUSON

103-104. ENGLISH COMPOSITION.—A course in descriptive and narrative writing. Class discussion of students' manuscripts, supplemented by a critical evalua-

tion of a few selected short stories and by individual conferences with the instructor. Open to sophomores, juniors, and seniors. The consent of the instructor should be secured as early as possible in the spring semester. Prerequisite for English 104: English 103. 6 s.h. (E) PROFESSOR BLACKBURN

SPEECH AND DRAMA

51. ESSENTIALS OF PUBLIC SPEAKING.—A basic course in public speaking, designed to give the student the poise and confidence necessary to think and speak freely before an audience. Particular attention is paid to the gathering and organization of speech materials and to oral presentation. Not open to juniors and seniors. 3 s.h. ASSOCIATE PROFESSOR REARDON; ASSISTANT PROFESSORS MICHALAK AND SCHWERMAN

118. PERSUASIVE SPEAKING.—The psychological and sociological techniques used in gaining acceptance of ideas through speech. Study is made of the factors influencing human behavior; audience analysis and motivation; choice, arrangement, and adaptation of material. Extensive practice in persuasive speaking. Prerequisite: English 151 or consent of the instructor. 3 s.h. (W) ASSOCIATE PROFESSOR WETHERBY

119. HISTORY OF THE THEATER.—The origin and development of drama, acting, and stagecraft from ancient Greece to the modern European and American theater. Production problems of representative plays of the various periods will be discussed. Primarily for juniors and seniors; open also to sophomores approved by the instructor. 3 s.h. (E) ASSOCIATE PROFESSOR REARDON

121. STAGECRAFT.—An introductory course on the technical aspects of play production: scenery, lighting, properties, make-up, and costuming. Lectures and laboratory. Laboratory work will be coordinated with the various productions of the Duke Players. Primarily for juniors and seniors; open also to sophomores approved by the instructor. 3 s.h. (E) ASSISTANT PROFESSOR MICHALAK

122. PLAY PRODUCTION.—An introduction to the methods of producing a play; theater organization, play selection, casting, and rehearsal. Lectures and laboratory. Primarily for juniors and seniors; open also to sophomores approved by the instructor. 3 s.h. (E) ASSISTANT PROFESSOR MICHALAK

139. THE SPEAKING VOICE.—The correction of minor functional speech disorders. The speech organs and their function. The International Phonetic Alphabet and its use. Drill in pronunciation, diction, vocal quality. Primarily for sophomores, juniors, and seniors; also open to freshmen with the consent of the instructor. 3 s.h. (W)
ASSOCIATE PROFESSOR WETHERBY AND ASSISTANT PROFESSOR SCHWERMAN
[Offered both semesters]

150. ORAL INTERPRETATION OF LITERATURE.—A study of poetry and certain types of prose, with practice in the technique by which they may be communicated to an audience. 3 s.h. (W) ASSISTANT PROFESSOR SCHWERMAN
[Offered both semesters]

151. ESSENTIALS OF PUBLIC SPEAKING.—A basic course in public speaking for juniors and seniors dealing with the same matters as 51. (Not open for credit to students who have taken 51). 3 s.h. (E & W)
ASSOCIATE PROFESSOR REARDON; ASSISTANT PROFESSORS MICHALAK AND SCHWERMAN

152. ARGUMENTATION.—The principles of argumentation and debating. The techniques of analysis, investigation, evidence, reasoning, brief making, and refutation. Participation in class discussions and debates. Prerequisite: English 151 or consent of the instructor. 3 s.h. (W) ASSOCIATE PROFESSOR WETHERBY
[Offered in the fall semester]

171, 172. RADIO BROADCASTING.—The theory and practice of radio broadcasting. The purpose, preparation, and production of various types of radio programs. There will be experience before a microphone in a studio situation. Laboratory work both semesters. Primarily for juniors and seniors; open also to sophomores approved by the instructor. 6 s.h. (W) ASSOCIATE PROFESSOR WETHERBY

ENGLISH AND AMERICAN LITERATURE AND LANGUAGE

55, 56. REPRESENTATIVE BRITISH WRITERS.—The following works are studied in the first semester: Chaucer's Prologue to *The Canterbury Tales* and at least two tales, Shakespeare's *I Henry IV, Hamlet* or *King Lear,* and one other play, John Donne's *Poems* (selections), Milton's *Paradise Lost* (selections) and some of the shorter poems; in the second semester: Pope's *Poems* (selections), Fielding's *Joseph Andrews,* Keats's *Poems and Letters,* Arnold's *Selected Poetry and Prose,* Dickens's *Great Expectations,* Joyce's *Portrait of the Artist as a Young Man,* and Eliot's *The Waste Land and Other Poems.* 6 s.h. (E & W)
PROFESSOR BEVINGTON AND STAFF

57, 58. REPRESENTATIVE AMERICAN WRITERS.—Selections and complete works. The first semester will include Poe, Emerson, Thoreau, Hawthorne, Melville, Whitman, and Dickinson; the second will include Twain, James, Frost or Robinson, Dreiser, O'Neill, Cummings, and Faulkner or Hemingway. 6 s.h. (E & W)

111, 112. EIGHTEENTH-CENTURY LITERATURE.—The writers emphasized in the first term are Pope, Swift, Defoe, Addison, Steele, Fielding; in the second term, Johnson, Gray, Boswell, Goldsmith, Sheridan, the later novelists, and Blake. 6 s.h. (E)
ASSISTANT PROFESSOR FERGUSON

117. MILTON.—Milton's poetry and prose, together with their relation to the period and to other great works of literature. 3 s.h. (E) PROFESSOR BRINKLEY

123, 124. SHAKESPEARE.—In the first semester twelve plays, before 1600; in the second semester about ten plays, after 1600. 6 s.h. (E & W)
ASSOCIATE PROFESSORS BOWMAN AND BRYANT; ASSISTANT PROFESSOR WILLIAMS

125, 126. ENGLISH LITERATURE, 1789-1832.—The course begins with selections from the poetry of the forerunners of Romanticism. The chief emphasis in the first semester is on the work of the older Romantics: Wordsworth, Coleridge, Lamb, and Hazlitt. In the second semester the chief emphasis is on the work of the younger Romantics: Bryon, Shelley, Keats, and DeQuincey. 6 s.h. (W)
ASSOCIATE PROFESSOR PATTON

129. ENGLISH NOVEL.—The history of the novel from Richardson through Hardy, with attention to social contexts and literary techniques. 3 s.h. (E)
ASSISTANT PROFESSOR SMITH

131, 132. ENGLISH LITERATURE, 1832-1900.—A study of the chief English writers of poetry, prose, and drama from Carlyle to Yeats. The major writers studied in the first semester are Carlyle, Tennyson, Browning, Macaulay, Mill, and Newman; in the second semester, Arnold, Ruskin, the Rossettis, Morris, Swinburne, Shaw, and Yeats, with selections from other writers. Collateral reading from novels of the period. 6 s.h. (E) PROFESSORS BEVINGTON, SANDERS, AND STEVENSON

133, 134. TWENTIETH-CENTURY POETRY.—A study of twentieth-century poetry and poetic criticism in England and America. Problems in critical analysis and interpretation. First semester: the emphasis is on sources in nineteenth-century Symbolism and on the poetry of Hopkins, Yeats, Eliot, Pound, and Stevens. Second semester: the emphasis is on the poets and the poetic theories of the last thirty years. 6 s.h. (E) ASSOCIATE PROFESSOR BEVINGTON

137, 138. AMERICAN LITERATURE.—A survey of American literature from colonial times to the present. Selections and complete novels (Hawthorne and Melville in the first semester; Twain, Henry James, and others in the second). Not open for credit to students who have taken 57, 58. 6 s.h. (E & W)
PROFESSOR FENTON; ASSISTANT PROFESSORS ANDERSON AND BUDD

141. CHAUCER.—*The Canterbury Tales* and the minor poems, with attention to their literary and social background. 3 s.h. (W)

143, 144. ENGLISH LITERATURE: ELIZABETHAN AND SEVENTEENTH CENTURY.—A study of the poetry, prose, and drama of the period. First semester: the emphasis in poetry is on Wyatt, Sidney, Spenser, Raleigh, Shakespeare; in prose, on Sidney and on Florio's Montaigne; in drama, on Marlowe.

Second semester: the chief emphasis is on the metaphysical poets—Donne through Vaughan. Prose: Bacon, Burton, Donne, Browne. Drama: Jonson, Webster, Ford. 6 s.h. (E) PROFESSOR BLACKBURN

147. THE LITERARY EXPRESSION OF SCIENTIFIC THOUGHT.—Readings which delineate man's changing concept of nature, with emphasis on both the scientific thought and the literary merit of each text. Representative works of Hesiod, Plato, Aristotle, Lucretius, Descartes, Thomas Browne, Bertrand Russell, and others. Primarily for engineering students and majors in science. 3 s.h. (W) ASSISTANT PROFESSOR HENINGER

153, 154. READINGS IN EUROPEAN LITERATURE.—Significant works in European literature are read in translation and related to similar works in English literature. The first semester includes selected writings of Homer, the Greek dramatists, Plato, Vergil, and Ovid. The second semester comprises works by Dante, More, Cervantes, Molière, Voltaire, Goethe, Dostoevski, Ibsen, and Kafka. 6 s.h. (W) ASSISTANT PROFESSOR HENINGER

155. MODERN EUROPEAN DRAMA.—Continental and Irish plays from Ibsen to Brecht are read in relation to the modern drama of ideas and to the free theater movement. 3 s.h. (E) ASSOCIATE PROFESSOR REARDON

156. MODERN ENGLISH AND AMERICAN DRAMA.—English and American plays from Pinero to Arthur Miller are read and discussed in relation to European origins and to the contemporary scene. 3 s.h. (E) ASSOCIATE PROFESSOR REARDON

158. CONTEMPORARY FICTION.—Intensive reading in selected fiction since 1890, with emphasis on form and technique. Conrad, James, Lawrence, Forster, Kafka, Gide, Joyce, Huxley, and Faulkner. 3 s.h. (E) ASSISTANT PROFESSOR SMITH

165, 166. AMERICAN FICTION.—A survey of the novel and short story. The first semester covers the nineteenth century, from Washington Irving to Henry James; the second covers the twentieth century through ten representative books. 6 s.h. (E) ASSISTANT PROFESSOR BUDD

197-198. SENIOR SEMINAR IN ENGLISH.—A course designed to offer guidance in the analysis and interpretation of English and American literature to students of superior ability. Comparative studies will be encouraged, and considerable reading will be required in critical and aesthetic theory. Emphasis will be placed upon the quality of the final essay. Admission by invitation of the department. 6 s.h. (W) PROFESSOR BEVINGTON

FOR SENIORS AND GRADUATES

203. CHAUCER.—The minor poems, *Troilus,* and *The Canterbury Tales.* 3 s.h. (W) PROFESSOR FISHER

207, 208. HISTORY OF THE ENGLISH LANGUAGE.—A survey of the language from Old to Present English, taking into consideration developments in phonology, morphology, syntax, and vocabulary. 6 s.h. (W) PROFESSOR FISHER

215, 216. ELIZABETHAN DRAMA.—Study of one or two major dramatists (Jonson or Beaumont and Fletcher) and extensive reading in other writers (Heywood, Ford, Massinger, Marlowe, Middleton) with emphasis on the nature and qualities of their work in relation to its historical background. 6 s.h. (W) ASSOCIATE PROFESSOR BRYANT

217. MILTON.—Milton's poetry and prose, with emphasis on the major poems. 3 s.h. (W) PROFESSOR BRINKLEY

218. SPENSER.—The reading of Spenser's works, with chief attention to *The Faerie Queene.* 3 s.h. (W) ASSISTANT PROFESSOR HENINGER

219, 220. THE EIGHTEENTH CENTURY.—Swift, Pope, Defoe, Addison, Steele, and others are studied in the first semester; in the second, Gray, Johnson, Boswell, Collins, Goldsmith, the novelists and other writers. 6 s.h. (W) PROFESSOR BOYCE AND ASSISTANT PROFESSOR FERGUSON

221, 222. ENGLISH LITERATURE OF THE EARLY NINETEENTH CENTURY.—The British Romantic poets and prose writers from Scott to the early Carlyle, with special attention to Wordsworth, Coleridge, and Keats. 6 s.h. (w)
PROFESSORS SANDERS AND STEVENSON

223, 224. ENGLISH LITERATURE OF THE LATER NINETEENTH CENTURY.—The first semester is devoted chiefly to Carlyle, Dickens, Thackeray, Tennyson, and Browning; the second semester to Arnold, Ruskin, Pater, George Eliot, Meredith, the Pre-Raphaelites, and Swinburne. 6 s.h. (w)
PROFESSORS BEVINGTON, SANDERS, AND STEVENSON

229, 230. AMERICAN LITERATURE, 1800-1865.—The writers emphasized in the first semester are Emerson, Thoreau, and Hawthorne; in the second semester, Poe and Melville. 6 s.h. (w) PROFESSOR TURNER AND ASSISTANT PROFESSOR BUDD

233, 234. AMERICAN LITERATURE, 1865-1920.—Selected works of representative authors of the period. The first semester's assignments will include Whitman, Lanier, Mark Twain, James, Howells, Emily Dickinson, Henry Adams, and the Local Colorists; the second semester's, Crane, Norris, Moody, London, Dreiser, Edith Wharton, Willa Cather, O'Neill, Robinson, and Frost. The lectures will deal primarily with literary trends as shaped by the social background. 6 s.h. (w)
PROFESSORS FENTON AND GOHDES

235, 236. AMERICAN LITERATURE SINCE 1920.—The first semester will include Sherwood Anderson, Mencken, Lewis, Lardner, Gertrude Stein, Pound, Eliot, E. E. Cummings, Hemingway, Faulkner, and Fitzgerald; the second semester, Dos Passos, Farrell, Steinbeck, Wolfe, MacLeish, Stephen Vincent Benet, Richard Wright, and more recent writers. 6 s.h. (w) PROFESSOR FENTON

237. ENGLISH DRAMA, 1642-1800.—The heroic play and the comedy of manners of the Restoration; the important plays, serious and comic, of the eighteenth century. 3 s.h. [Not offered in 1960-61.] PROFESSOR WARD

239. SHAKESPEARE.—A study of the plays and poems. 3 s.h. (w)
ASSOCIATE PROFESSOR BRYANT

251, 252. ENGLISH LITERATURE IN THE SEVENTEENTH CENTURY.—A survey of the major works in prose, poetry, and drama from 1600 to the death of Dryden. 6 s.h. (w) PROFESSOR WARD

262. ENGLISH LITERATURE OF THE EARLY TWENTIETH CENTURY.—Representative work of leading writers from 1900 to 1930, in the fields of fiction, drama, poetry, and essay. Critical analysis of selected specimens, and discussion of types, themes, and trends. 3 s.h. (w) ASSISTANT PROFESSOR SMITH

269, 270. SOUTHERN LITERATURE.—The principal authors and the chief literary developments from the beginnings to the present. Emphasis in the first semester is on Byrd, Kennedy, Simms, Poe, Timrod, and the humorists; in the second on Lanier, Harris, Cable, Mark Twain, Ellen Glasgow, and Faulkner. Attention is given to the historical and cultural background and to literary relations extending outside the region. 6 s.h. PROFESSOR TURNER
[Not offered in 1960-61.]

274. AMERICAN HUMOR.—The development of the native tradition in the Down-East humorists and the humorists of the Old Southwest. Extensive reading in Mark Twain and his contemporaries, and some attention to the continuation of the tradition after Mark Twain. 3 s.h. PROFESSOR TURNER
[Not offered in 1960-61.]

DEPARTMENTAL MAJOR

Prerequisite: English 1 and 2.

Major Requirements: English 55-56 and eighteen semester hours, above the sophomore level, in English and American literature including the following:

1. Six hours at the Junior-Senior level (generally to be taken in the Junior year) in one of five designated period courses (143-144, 111-112, 125-126, 131-132, 137-138).

2. Three hours in one of the major authors, Chaucer, Shakespeare, or Milton (141, 203, 123, 124, 239, 117, 217).
3. Six hours (to be taken in the Senior year) in Senior-Graduate courses, numbered at the 200 level. These courses are to be chosen so that surveys of particular periods do not duplicate in subject matter the courses taken in (1) above.
4. The remaining hours must meet the following distribution requirements:
   (a) Three hours of English literature before 1800, unless the requirement is met in (1) or (3) above.
   (b) Three hours of English literature after 1800, unless the requirement is met in (1) or (3) above.
   (c) Three hours of American literature, unless the requirement is met in (1) or (3) above.

Related Work: Eighteen semester hours, which may include appropriate courses in history, aesthetics, art, music, languages, literature in translation, philosophy, or courses in composition, dramatics, and speech. Related work must be taken in at least two departments.

Through the Senior Seminar in English (197-198) the Department offers work leading to Graduation with Distinction in English.

FORESTRY

Students without a Bachelor's degree who are preparing for work in forestry as a profession should take the courses outlined under the Academic-Forestry Combination in the section on Requirements for Degrees. However, with the consent of the instructor in charge, certain forestry courses may be elected by students in other curricula provided they have had adequate preparation (see *Bulletin of the School of Forestry*).

Members of the sophomore, junior, and senior classes, whether or not registered in the Academic-Forestry Combination, may elect the following course:

52. PRINCIPLES OF FORESTRY.—Introduction to forestry in the United States; growth of trees and forests; social and economic problems in developing America's primary renewable natural resource; contribution of forests to the national economy. 2 s.h. (w) MR. WHITE

GEOLOGY

PROFESSOR BERRY, CHAIRMAN AND DIRECTOR OF UNDERGRADUATE STUDIES; ASSISTANT PROFESSORS FURBISH AND HERON

51. GENERAL GEOLOGY.—This course is designed to give a general view of the surface features of the earth, their origin, structure, and materials. Illustrative materials are studied in the laboratory. Excursions are made to neighboring points where the principles of the science are studied in the field. Three one-hour lectures or recitations and one three-hour laboratory. 4 s.h. (E)
ASSISTANT PROFESSORS FURBISH AND HERON

52. GENERAL GEOLOGY.—This course is designed to give some knowledge of the chief events of the earth's history. Excursions will be made to suitable neighboring localities. Three one-hour lectures or recitations and one three-hour laboratory. Prerequisite: Geology 51. 4 s.h. (E)
ASSISTANT PROFESSORS FURBISH AND HERON

55. STRUCTURAL GEOLOGY.—A study of the structural features of the earth's crust. Three one-hour lectures. Prerequisite: Geology 51, 52. 3 s.h. (E)
ASSISTANT PROFESSOR HERON

58. GEOMORPHOLOGY.—A detailed study of the process at work on the land surface and the topographic forms produced by them under different climatic conditions. This course includes practice in the interpretation of topographic maps. Three one-hour lectures or recitations and one three-hour laboratory. 4 s.h. (E)
PROFESSOR BERRY

101-102. MINERALOGY.—This course is devoted to a study of the fundamentals of crystallography and the crystal groups, using crystal models and crystallized minerals. Followed by the systematic study of about 175 important minerals. Determinative work includes exercises on sight recognition, identification by blowpipe, and other physical and chemical tests. Excursions will be made to neighboring mineral localities. Three two-hour periods. Prerequisite: Chemistry 1-2 (can be taken concurrently). 8 s.h. (E) PROFESSOR BERRY

151. ECONOMIC GEOLOGY.—Study of world distribution, geologic occurrence, and uses of important mineral deposits. Three one-hour lectures or recitations and one three-hour laboratory. Prerequisite: Geology 101-102. 4 s.h. (E) PROFESSOR BERRY

152. INTRODUCTORY PALEONTOLOGY.—Systematic study of invertebrate paleontology, dealing mainly with generic characters of the fossil invertebrates and their use in identifying and correlating geologic formations. Three one-hour lectures or recitations and one three-hour laboratory. Prerequisites: Geology 51, 52, and Zoology 2. 4 s.h. (E) PROFESSOR BERRY

164. INTRODUCTION TO GEOLOGIC MAPPING.—An introduction to the fundamental principles and techniques used in geologic mapping, including applicable methods of surveying, the use of aerial photographs, the interpretation of geologic maps, and the solution of problems in geologic relationships. Field excursions will be made when possible. Two hours of lecture and three hours of laboratory each week. Prerequisites: Geology 51, 52, 55, 151. 3 s.h. (E) ASSISTANT PROFESSOR HERON

DEPARTMENTAL MAJOR

Prerequisites: Chemistry 1-2; Zoology 2, Geology 51, 52.

Major Requirements: 1. Number of hours needed, 30 s.h. 2. Required courses, Geology 55, 101-102, 151, 152, 164. 3. Recommended courses, Geology 58.

Related Work: 1. Number of hours needed for A.B., 12 s.h.; for B.S., 18 s.h. 2. Required courses, 1 year Mathematics. 3. Departments in which related work is usually taken, Chemistry, Economics 109, 115, Mathematics, Physics, Sociology 93, Zoology, and Engineering.

GERMANIC LANGUAGES AND LITERATURE

PROFESSOR SALINGER, CHAIRMAN; ASSOCIATE PROFESSOR MAXWELL, DIRECTOR OF UNDERGRADUATE STUDIES; ASSISTANT PROFESSOR SEYMOUR, SUPERVISOR OF FRESHMAN INSTRUCTION; ASSOCIATE PROFESSOR SCHOOLFIELD; ASSISTANT PROFESSOR BEARE; MR. ALLEN AND MR. BRODERSEN

1-2. ELEMENTARY GERMAN.—6 s.h. (E & W) ASSISTANT PROFESSOR SEYMOUR AND STAFF

63-64. INTERMEDIATE GERMAN.—6 s.h. (E & W) ASSOCIATE PROFESSOR MAXWELL AND STAFF

91-92. INTRODUCTION TO GERMAN LITERATURE.—A third year course. Both literary and linguistic factors are combined with practice in the spoken language. 6 s.h. ASSOCIATE PROFESSOR MAXWELL AND ASSISTANT PROFESSOR BEARE

For courses in the 100 and 200 group, which well be offered in 1960-61, please consult list furnished by Dean's office before registration. The only prerequisite for 100 group courses is German 63-64.

107, 108. SCIENTIFIC GERMAN.—The German language as used in the various contemporary sciences. 6 s.h. ASSOCIATE PROFESSOR MAXWELL

109, 110. GERMAN PROSE FICTION.—Origin and development of the German novel and short story with special emphasis on the nineteenth century. 6 s.h. PROFESSOR SALINGER

115, 116. GERMAN DRAMA OF THE NINETEENTH CENTURY.—A study of leading dramatists from Kleist to Hauptmann. 6 s.h.

117, 118. GERMAN CONVERSATION.—A course in writing and speaking German for properly qualified students. 6 s.h.
ASSISTANT PROFESSOR SEYMOUR; MR. ALLEN AND MR. BRODERSEN

125, 126. CONTEMPORARY GERMAN LITERATURE.—A study of representative works of the twentieth century. Kafka will be read first semester; Thomas Mann's selected works will be read second semester. 6 s.h.
ASSOCIATE PROFESSOR MAXWELL

131, 132. INTRODUCTION TO GOETHE.—The reading of his early novels and epics and works pertaining to his life. 6 s.h. ASSOCIATE PROFESSOR MAXWELL

133, 134. THE GERMAN LYRIC.—A survey of the development of German lyric poetry, principally from Klopstock to Rilke (with some attention to mediaeval and early modern poets), seen as poetic reflection of German thought. 6 s.h.
PROFESSOR SALINGER

135. THE NATURE OF LANGUAGE.—Origin and nature of language, methods of descriptive, historical, and comparative linguistics, the linguistic heritage of modern European tongues, world language families. No specific prerequisite. Sophomore standing. Does not count toward fulfillment of language requirement. 3 s.h. ASSISTANT PROFESSOR SEYMOUR

201, 202. GOETHE.—A study of his life and works in the light of his lasting significance to World Literature. 6 s.h. PROFESSOR SALINGER

203, 204. EIGHTEENTH CENTURY.—Eighteenth-century German literature in its relation to contemporary European philosophy. 6 s.h. PROFESSOR SALINGER

205, 206. MIDDLE HIGH GERMAN.—The language and literature of Germany's first classical period. 6 s.h.

207, 208. GERMAN ROMANTICISM.—The course covers the entire field of German romanticism from 1800 to 1850. 6 s.h. ASSOCIATE PROFESSOR SCHOOLFIELD

209, 210. KLEIST, GRILLPARZER, and HEBBEL.—The development of the drama in Germany and Austria between Schiller and Naturalism. 6 s.h.
PROFESSOR SALINGER

211, 212. HEINRICH HEINE AND HIS TIME.—Heine's life and thought, and the contemporary European culture. 6 s.h. PROFESSOR SALINGER

213. LITERATURE OF THE EMPIRES, 1866-1918.—German and Austrian authors of the period with emphasis on Raabe, Fontane, von Saar, Hauptmann, the early works of Thomas and Heinrich Mann, the early Hesse and Rilke. 3 s.h.
ASSOCIATE PROFESSOR SCHOOLFIELD

214. GERMAN LITERATURE SINCE 1918.—Special emphasis on Thomas Mann, Broch, Doderer and the novel since 1920, the drama from Hofmannsthal to Brecht, the poetry of George, the later Rilke and Benn. 3 s.h.
ASSOCIATE PROFESSOR SCHOOLFIELD

215. SEVENTEENTH CENTURY LITERATURE.—A study of the leading writers of the Baroque, seen against the background of their time. 3 s.h.
ASSISTANT PROFESSOR BEARE

COMPARATIVE LITERATURE

201, 202. ROMANTICISM.—Studies in the origin, rise and development of the Romantic Movement in the chief literatures of the Western world. The approach is comparative; the principal emphasis will be on England, France and Germany with some reference to other countries. Selected subjects will be covered in lectures by speakers from various departments of the University. 6 s.h. PROFESSOR SALINGER

203, 204. REALISM AND SYMBOLISM.—Comparative studies in the literatures of England, France, Germany, Russia, the Scandinavian countries, Spain and Italy, tracing the decline of romantic individualism and the reappraisal of man's significance against the social background. Selected subjects will be covered in lectures by speakers from various departments of the University. 6 s.h.
PROFESSOR SALINGER

DEPARTMENTAL MAJOR

1. Prerequisites: German 1-2 and 63-64.

2. Major Requirements: Twenty-four semester hours in the German Department. Twelve of these must be selected from the 200 courses. The remaining twelve may be selected from German 91-92 and any courses in the 100 group. German 107, 108 does not count toward the major. German 117, 118 will be highly recommended to any student majoring in the Department.

3. Related Work: Eighteen semester hours, chosen from the Humanities with the approval of the German Department.

GOVERNMENT

See courses listed under Political Science.

GREEK

PROFESSOR TRUESDALE, CHAIRMAN AND DIRECTOR OF UNDERGRADUATE STUDIES; MR. BROWN

Courses 15, 121, 122, 131, 141, 142, 151 are entirely in English and require no knowledge of the Greek language. The purpose in offering them is to give a wider circle of students some conception of the debt which modern civilization owes to the Greeks.

1-2. COURSE FOR BEGINNERS.—Open to all students. 6 s.h. (W) PROFESSOR TRUESDALE

15. MYTHOLOGY.—A study of Greek mythology and the use made of it in art and English literature. No knowledge of the Greek language is required. Open to freshmen as an elective in either semester. 3 s.h. (W & E) STAFF

63-64. INTERMEDIATE GREEK.—Intensive review of fundamentals with emphasis on development of comprehensive reading ability. Selections from Herodotus, Xenophon, and Lysias. Open to students who have completed course 1-2. 6 s.h. (W) MR. BROWN

105-106. HOMER.—*Iliad,* Books I-III. PLATO.—*Apology* and *Crito.* Open to students who have completed courses 1-2 and 63-64 or their equivalents. 6 s.h. (W) PROFESSOR TRUESDALE

107-108. EURIPIDES.—*Medea.* SOPHOCLES.—*Oedipus Tyrannus.* ARISTOPHANES.—*Clouds.* Open to students who have completed the required preliminary work. 6 s.h. (W) STAFF

117-118. GREEK PROSE COMPOSITION.—The character of this course is determined by the needs of the students enrolled. 3 s.h. (W) PROFESSOR TRUESDALE

121, 122. GREEK LITERATURE IN ENGLISH TRANSLATION.—The purpose of this course is to give a general survey of the life and civilization of the Greeks, especially to those who have never studied the language but wish to become acquainted with some of the choicest portions of the literature by the use of translations. It is, however, open as an elective to all juniors and seniors, whether they know Greek or not. First, the *Iliad* and the *Odyssey* are read in translation and illustrated with stereopticon views of the excavations and discoveries at Troy and other cities of the Aegean age; then, many of the extant plays of the three great tragic poets are studied in English translation. 6 s.h. (W & E) PROFESSOR TRUESDALE AND STAFF

Students may elect course 122, whether they have taken course 121 or not.

131. HISTORY OF GREECE.—The history of the Greek world from the Late Bronze Age to the Macedonian conquest. Open to seniors, juniors, and (by arrangement) sophomores. No knowledge of Greek is required. 3 s.h. (E) MR. BROWN

141, 142. GREEK ART.—(May be treated as two semester-courses.) Open to seniors, juniors, and sophomores. A comprehensive survey of the development of Greek architecture and Greek sculpture in all periods. Course 141 is opened by

a preliminary account of Egyptian, Mesopotamian, and Aegean artistic backgrounds. Course 142 is devoted chiefly to Greek art of the greatest period with the main emphasis on sculpture, and may be elected independently of course 141. All lectures are fully illustrated by slides. No knowledge of Greek is required. 6 s.h. (E) MR. BROWN

151. GREEK ARCHAEOLOGY.—A general treatment of the subject, with emphasis upon the value of archaeological discovery as evidence of the artistic development of the Greek people. The course includes a survey of the various archaeological sites. Open to seniors, juniors, and (by arrangement) sophomores. 3 s.h. (E) MR. BROWN

DEPARTMENTAL MAJOR

Prerequisite: Greek 1-2.

Major Requirements: A candidate for a major in Greek must complete 24 semester hours, including the following courses: Greek 63-64, 105-106, 107-108, 117-118, and 131.

Related Work: Eighteen semester hours selected from at least two other departments subject to the approval of the Greek Department. Appropriate courses are chosen usually in Latin, Philosophy, Art, and English.

Graduates of Duke University may attend the American School of Classical Studies at Athens, Greece, without charge for tuition and are eligible to compete for the fellowships that are offered annually by the School. These consist of two fellowships in Greek archaeology and one in the language, literature, and history of ancient Greece, each with a stipend of $2,000. They are awarded mainly on the basis of examinations held in the beginning of February of each year.

HEALTH AND PHYSICAL EDUCATION

TRINITY COLLEGE AND THE COLLEGE OF ENGINEERING

MR. CAMERON, DIRECTOR; PROFESSOR AYCOCK, DIRECTOR OF UNDERGRADUATE STUDIES AND SUPERVISOR OF FRESHMAN INSTRUCTION; ASSOCIATE PROFESSORS FALCONE, HARRISON, AND PERSONS; ASSISTANT PROFESSORS BLY, COX, MONTFORT; MESSRS. BUBAS, BUEHLER, HAGLER, MASSEY, RISLEY, SKINNER, SHABEL, AND WATERS

REQUIRED PHYSICAL EDUCATION FOR MEN

A student must complete four semesters of physical education in order to fulfill graduation requirements.

All students are given a medical and physical examination before registration. Students who have physical handicaps must register in Corrective Physical Education. Students assigned to these classes will take work suited to their particular needs and capacities.

Students without defects will register in Physical Education 1 and 2 in their freshman year. The activities are selected from the following: apparatus, combative games (fundamentals of basketball, speedball, soccer, volleyball), swimming and tumbling. Swimming is required each semester of the freshman year.

After a student has completed Physical Education 1 and 2, he may complete his physical education requirement by electing and satisfactorily completing two courses from the following individual and team sports: 51. Apparatus-Tumbling; 52. Badminton; 53. Basketball-Handball; 56. Swimming, advanced; 57. Tennis-Volleyball; 58. Golf. A fee of $10.00 for the semester, payable at the Treasurer's Office, is charged for course 58. Golf.

ELECTIVES IN PHYSICAL EDUCATION

The courses listed below are arranged to meet the increasing demand for teachers who are qualified to coach and teach Physical Education. They are open for credit only to students in the High School Teaching Program or to majors in Education. These students may elect 18 semester hours from courses in this group. Six semester hours may be elected from the courses listed under Special Methods in Physical Education, 9 semester hours from the courses listed under Theory and

Practice in Physical Education, and 3 semester hours from Health Education. The courses should be selected with the advice of the Director of Undergraduate Studies in order to meet the needs of the individual.

SPECIAL METHODS IN PHYSICAL EDUCATION

163. ATHLETIC COACHING IN SECONDARY SCHOOLS.—Theory and practice in the fundamentals of coaching baseball and track. Prerequisites: courses 1 and 2. Open to juniors and seniors. Sophomores by permission only. 3 s.h. (w)
MESSRS. CHAMBERS AND PARKER

164. ATHLETIC COACHING IN SECONDARY SCHOOLS.—Theory and practice in the fundamentals of coaching football and basketball. Prerequisites: courses 1 and 2. Open to juniors and seniors. Sophomores by permission only. 3 s.h. (w)
MR. CAMERON AND STAFF

THEORY AND PRACTICE IN PHYSICAL EDUCATION

65. HISTORY AND PRINCIPLES OF PHYSICAL EDUCATION.—A study of the objectives and principles upon which physical education is based. The history of physical education is studied in order to show the changes in objectives, principles, and methods and as an aid in the interpretation of trends. Open to sophomores, juniors, and seniors. 3 s.h. (w) PROFESSOR AYCOCK

172. RECREATIONAL LEADERSHIP.—Combative contests, games, mass athletics, supervision of community recreation. Open to juniors and seniors. Sophomores by permission only. 3 s.h. (w) ASSOCIATE PROFESSOR HARRISON

182. THE ADMINISTRATION OF HEALTH AND PHYSICAL EDUCATION IN SECONDARY SCHOOLS.—Presents the everyday problems that arise in the experience of the teacher of health and physical education. Open to juniors and seniors. 3 s.h. (w) ASSOCIATE PROFESSOR HARRISON

190. PROTECTIVE PRACTICES IN PHYSICAL EDUCATION.—A study of safety measures, including training and first aid. Open to juniors and seniors. 3 s.h. (w) MR. CHAMBERS AND ASSISTANT PROFESSOR MONTFORT

HEALTH EDUCATION

132. SCHOOL HEALTH PROBLEMS.—A course designed (a) to familiarize the teacher with school health problems such as physical screening, communicable disease prevention and control, healthful school environment; (b) to present methods and materials for health teaching in elementary and secondary schools. 3 s.h. (w) PROFESSOR AYCOCK

WOMAN'S COLLEGE

PROFESSOR GROUT, CHAIRMAN; PROFESSOR LEWIS, DIRECTOR OF UNDERGRADUATE STUDIES; ASSISTANT PROFESSOR EDDY, SUPERVISOR OF FRESHMAN INSTRUCTION IN PHYSICAL EDUCATION; ASSOCIATE PROFESSOR UHRHANE, SUPERVISOR OF FRESHMAN INSTRUCTION IN HEALTH EDUCATION; PROFESSOR BOOKHOUT; ASSOCIATE PROFESSOR HOLTON; ASSISTANT PROFESSORS SPANGLER AND WOODYARD; MRS. KISTLER, MISS PROCTOR AND MRS. WRAY

A student must complete four semester hours of physical education in order to fulfill graduation requirements. Ordinarily work must be completed by the end of the sophomore year. Classes meet three times a week or the equivalent thereof.

Each semester is divided into two halves. In general, indoor activities are taught during the two winter half-semesters and outdoor activities in the fall and spring.

Every student must take one course (half-semester) in dance and one in swimming if she is unable to pass the swimming test. The remaining work necessary to complete the requirement may be elected from the activities listed in this section.

All students are given a physical and medical examination upon entering and at any other time when deemed necessary. Classes in individual physical education and light sports are arranged for those who should not take the more active work.

SPECIAL FRESHMAN PHYSICAL EDUCATION

At the beginning of the year, after a series of tests has been given, each freshman is registered for the course she most needs, as determined by the test scores. Such courses as sports fundamentals, fundamentals of rhythm and beginning swimming are offered for those who need to improve their skills in these areas. Students whose test scores are satisfactory will enroll in classes with the sophomores.

For freshmen, the winter half of the first semester consists of a course in fundamental movement twice a week and social hygiene once a week.

PHYSICAL EDUCATION ACTIVITIES

Individual and dual sports: Archery, badminton, bowling, diving, fencing, golf, ice skating, life saving, light sports, riding, stunts and tumbling, swimming, tennis, first aid, instructors' life saving and water safety.
Team sports: Basketball, hockey, "rec" ball, softball, volleyball.
Dance: Ballroom dance, folk dance, modern dance, square dance, tap dance.
Developmental Activities: Individual physical education, fundamental movement, fundamental rhythms, sports fundamentals.

PHYSICAL EDUCATION THEORY

The courses listed in this section are open for credit as follows: P.E. 91, 101, 103, 107, 113, 117, 119, 181-182 and 185 open only to students preparing to teach physical education on a full-time or part-time basis, with the exception of course 107 which is also open for credit to students preparing for social group work and religious education; Physical Education 102 and Health Education 134 required of all students in the Elementary Teaching Program; Physical Education 105-106, 108, 114, and Health Education 131, 134, 140 and 170 open for credit to all undergraduate students, both men and women.

91. FIRST AID AND SAFETY IN PHYSICAL EDUCATION.—A study of measures which must be taken to insure maximum safety in physical education programs. The Standard Red Cross First Aid Course will be included. 2 s.h. (E)
PROFESSOR BOOKHOUT

101. HISTORY AND PRINCIPLES OF PHYSICAL EDUCATION.—An historical survey stressing the relationship between the kind of physical education developed and the social, political and religious ideals of different nations and periods. Principles upon which physical education is based. Analysis of successful teaching. 2 s.h. (E) PROFESSOR GROUT

102. THE TEACHING OF PHYSICAL EDUCATION IN ELEMENTARY SCHOOLS.—A study of methods and materials used in teaching physical education to children; includes discussion on the theory of physical education, and practice in teaching elementary school activities. Required of students in the elementary school teaching program. 3 s.h. (E) PROFESSOR LEWIS

103. GAMES AND RHYTHMS FOR CHILDREN.—Required of students preparing for full-time teaching in physical education. 2 s.h. (E) PROFESSOR LEWIS

105-106. METHODS AND MATERIALS IN RECREATION.—A course intended to familiarize students with recreation activities and methods of organizing groups in these activities. Laboratory work includes practical leadership experience with a recreational club or group in a city organization. General fields covered are: Social Activities, Music Activities, Folk and Square Dancing, Games and Sports, Arts and Crafts, Drama Activities. Open to juniors and seniors without prerequisite. A year course meeting five periods per week throughout the year. Students who have had 102 or 103 may take 106 without 105. 6 s.h. (E)
ASSOCIATE PROFESSOR HOLTON

107. THE TEACHING OF RHYTHMIC ACTIVITIES.—Basic theory and practice in the methods of teaching various types of dance. 2 s.h. (E) MRS. WRAY
[Offered every other year.]

108. PROBLEMS IN COMMUNITY RECREATION.—A study of current trends in organized recreation including programs for community centers, hospitals, in-

dustries and churches, and city recreation; historical development and theories; qualifications and preparation for leadership. 3 s.h. (E)
ASSISTANT PROFESSOR WOODYARD

113. MAMMALIAN ANATOMY.—A study of all organ systems with special emphasis on osteology, arthrology and myology. The cat is used as laboratory animal, but constant application is made to man. Prerequisite: Zoology 1 and 2. 4 s.h. (E) PROFESSOR BOOKHOUT

114. KINESIOLOGY.—A study of muscle function. Analysis of fundamental movements with emphasis on the development of normal posture and efficient body movement. Required of students taking the major in physical education. Prerequisites: Zoology 1 and 2, and P.E. 113 or Zoology 53. 3 s.h. (E)
PROFESSOR BOOKHOUT

117. BODY MECHANICS AND INDIVIDUAL PHYSICAL EDUCATION.—A study of methods of teaching fundamental movement. An analysis of physical conditions for which specialized activity is required. Theory and practice in teaching individual physical education. 3 s.h. (E) PROFESSOR BOOKHOUT

119. ORGANIZATION AND ADMINISTRATION OF PHYSICAL EDUCATION.—Curriculum building in physical education. The administration of class and intramural programs. Administrative problems such as budget, equipment, facilities, interschool athletics, legal aspects, and public relations. 2 s.h. (E)
PROFESSOR GROUT

181-182. METHODS AND MATERIALS IN PHYSICAL EDUCATION.—A course in the theory and practice of teaching and officiating in games and sports. Laboratory hours arranged to provide practice on the field and in the gymnasium. 6 s.h. (E) PROFESSOR LEWIS AND STAFF

185. ADVANCED METHODS AND MATERIALS IN PHYSICAL EDUCATION. —A continuation of 181-182. Required of seniors preparing for full-time teaching in physical education. 2 s.h. (E) PROFESSOR LEWIS AND STAFF

HEALTH EDUCATION

131. HEALTH PROBLEMS IN THE TWENTIETH CENTURY.—Designed to promote a better informed citizenry in regard to major health problems and to encourage individuals to function as intelligent consumers of health products and services. 3 s.h. (E) ASSOCIATE PROFESSOR UHRHANE

134. SCHOOL HEALTH.—Organization and administration of the school health program; basic health problems in schools; methods and materials for teaching health education. Primarily designed for students preparing to teach in elementary and secondary schools and for physical education majors. Either semester. 3 s.h. (E) ASSOCIATE PROFESSOR UHRHANE

140. GEREOLOGY AND HEALTH.—Designed to help the college student understand and appreciate physical and emotional health problems of aging, housing and medical care plans, and the health implications of retirement. 3 s.h. (E)
ASSOCIATE PROFESSOR UHRHANE

170. SPECIAL PROBLEMS IN HEALTH.—A study of health problems related to such things as mass food production, automation and mobility, Civil Defense and disaster control; national and international health programs and problems. 3 s.h. (E) ASSOCIATE PROFESSOR UHRHANE

REQUIREMENTS FOR TEACHING HEALTH AND PHYSICAL EDUCATION IN PUBLIC SCHOOLS

The following requirements have been set up for students in the Teaching Program who wish to qualify as full-time or part-time teachers of Health and Physical Education. These requirements meet the standards of the North Carolina Department of Public Instruction for certification in Health and Physical Education and of most of the other states represented in the student body. Students preparing to teach in any state are advised to consult the department about specific requirements.

Prerequisites: Physical Education 91 and 101. Zoology 1-2.

Major Requirements: 23 s.h. including Physical Education 103, 107, 114, 117, 119, 181-182, 185, and Health Education 134.

Related Work: 17 to 19 s.h. Of these hours 8 must be in anatomy and physiology (P. E. 113, Mammalian Anatomy, and Zoology 151, Principles of Physiology). For the remaining hours, work done in the Department of Education leading to teacher certification is acceptable. Courses in Chemistry, Zoology, Sociology, Psychology, Art and Music are recommended.

DOUBLE TEACHING MAJOR IN BIOLOGY AND PHYSICAL EDUCATION

This is an optional plan for those physical education majors who wish to be certified in a second subject.

Prerequisites: as listed above.

Major Requirements: as listed above.

Related Work: Botany 1 must be taken in addition to the anatomy and physiology courses listed above. The following courses in the Department of Education should be taken: Education 103, 118, 215-216, and 276.

HISTORY

PROFESSOR ALDEN, CHAIRMAN; ASSOCIATE PROFESSOR WATSON, DIRECTOR OF UNDERGRADUATE STUDIES; PROFESSOR ROPP, SUPERVISOR OF FRESHMAN INSTRUCTION; PROFESSORS CLYDE, CURTISS, HAMILTON, LANNING, MANCHESTER, PARKER, AND WOODY; ASSOCIATE PROFESSORS ACOMB, COLTON, FERGUSON, HOLLEY, AND NELSON; ASSISTANT PROFESSORS DURDEN, HOLLYDAY, SCOTT, TISCHENDORF, AND YOUNG; DRS. CRANE AND GILLIN; MESSRS. BERNHARD, LIMOLI, AND SMITH

The undergraduate courses in history are designed to afford (1) an introduction to the study of history by a consideration of the history of the modern world; (2) a more intensive study of general American history; (3) opportunities for more advanced study of phases of American, English, European, Hispanic-American, Russian, and Far Eastern history.

Course 1-2 or 51-52 or E1-2 or an equivalent is a prerequisite for all other courses; course E1-2 is the prescribed course for students in the College of Engineering; courses 91 and 92 are prerequisite for all 100 and 200 courses in United States history. However, seniors with written permission from the instructor may take advanced American history courses without having had 91 and 92. Sophomores who took only one semester of course 1-2 in the freshman year may take courses 91, 92, 95, 96 or 99 concurrently with the second semester, provided they made a grade of B or above on the semester taken. Sophomores must obtain permission of the instructor in order to be admitted to courses numbered above 100; students who are not fully qualified sophomores will not be admitted to these courses. Courses for seniors and graduates are limited to twenty-five students; juniors may not elect them without special permission from the Department and the Executive Committee of the Graduate Faculty.

1, 2. MODERN HISTORY.—This course is an introduction to the study of modern history with special reference to the issues in the modern world. Topics selected for emphasis are: the contest between liberty and authority in the modern state; changing economic organization and theory—capitalism and the challenges to it; the problems of peace and war among the states; the changing faiths men live and die by. Beginning about 1500 with the rise of the European dynastic states, the story is pursued in the first semester to approximately 1848, and in the second through the two great world wars. The central theme in both semesters is the expansion of the influence of Western Europe throughout the world, with some attention to the rise of the United States as a world power. 6 s.h. (W & E)

Sophomores and juniors are not admitted to this course.

PROFESSORS PARKER AND ROPP; ASSOCIATE PROFESSOR FERGUSON; ASSISTANT PROFESSORS SCOTT, HOLLYDAY, TISCHENDORF, AND YOUNG; DRS. CRANE AND GILLIN; MESSRS. BERNHARD AND LIMOLI

E1-2. THE UNITED STATES IN THE WORLD TODAY.—This course is designed for students in the College of Engineering. Topics treated in the first semester are: the rise of national states in Western Europe and other factors attending the discovery and settlement of the New World; the foundation of American institutions; the establishment of the Federal Republic; the frontier, the westward movement, and contemporary international development; the Civil War; the growth of industry and its influence on society; the Spanish-American War and the emergence of the United States as a world power. In the second semester the emphasis is on the growing interdependence of the Western nations in the twentieth century; their influence throughout the world; the participation of the United States in the World Wars and the resultant problems of today. 6 s.h. (W)
MR. BERNHARD AND MR. SMITH

51, 52. MODERN HISTORY.—An introductory course for sophomores, juniors, and seniors dealing with the topics indicated in the description of course 1-2. 6 s.h. (W & E) PROFESSOR CURTISS; ASSOCIATE PROFESSORS ACOMB AND FERGUSON; ASSISTANT PROFESSORS HOLLYDAY, SCOTT, TISCHENDORF, AND YOUNG; DR. CRANE; AND MR. LIMOLI

51X, 52X. MODERN HISTORY.—A special section for seniors who have had no other history at Duke. The topics covered will be essentially the same as those indicated in the description of History 1-2. 6 s.h. (W) PROFESSOR ROPP

91. THE DEVELOPMENT OF AMERICAN DEMOCRACY TO 1865.—This course is a study of trends vital to an understanding of the United States today. The main theme is the development of American democracy. Problems of foreign policy, the growth of capitalism, political practices, social behavior, and conflicting ideals are considered in relation to this main theme. 3 s.h. (W & E)
ASSOCIATE PROFESSORS HOLLEY AND WATSON; ASSISTANT PROFESSOR DURDEN; DR. CRANE; AND MR. SMITH

92. THE DEVELOPMENT OF AMERICAN DEMOCRACY, 1865 TO THE PRESENT.—A continuation of History 91 with emphasis upon the emergence of contemporary problems. 3 s.h. (W & E)
ASSOCIATE PROFESSORS HOLLEY AND WATSON; ASSISTANT PROFESSOR DURDEN; DR. CRANE; AND MR. SMITH

Courses 91 and 92 are intended both to serve as continuation courses in the study of history and to afford the student an opportunity to gain the understanding of the past of the United States essential for intelligent citizenship. These courses are prerequisite for all 100 and 200 courses in United States history, but this prerequisite may be waived for seniors by written permission of the instructor.

95, 96. ANCIENT AND MEDIEVAL HISTORY.—An introductory study of the history of mankind from preliterate man through the development of the characteristic institutions of Western Europe. The first semester considers the prehistoric tribes, the early cultures of Mesopotamia and Egypt, the religious contribution of the Hebrews, and classical Greece and Rome. The second semester deals with Europe in the Middle Ages, from Constantine to Columbus, with emphasis upon institutional and cultural development. 6 s.h. (E) ASSISTANT PROFESSOR YOUNG

99. NAVAL HISTORY AND ELEMENTARY STRATEGY.—After a review of earlier periods, attention is given to the rise of sea-power and its importance in more recent times and to naval actions, especially in the two World Wars. This course is not open to students who have had N.S.101. 3 s.h. (W) PROFESSOR ROPP

105, 106. POLITICAL AND CONSTITUTIONAL HISTORY OF ENGLAND.—The origins and evolution of the principal institutions of the English government, related to their setting in a changing society. 6 s.h. (W) PROFESSOR HAMILTON

107, 108. SOCIAL AND CULTURAL HISTORY OF ENGLAND.—A study of English history from the fourteenth century to the present time in an effort to arrive at a synthesis of social and political events and thus provide a background for the study of English literature. Emphasis is placed on the ages of Chaucer, Shakespeare, and Milton; the eighteenth and early nineteenth centuries; the reign of Victoria and the twentieth century. 6 s.h. (E) ASSOCIATE PROFESSOR FERGUSON

Sophomores who made an average grade of B or above on course 1-2 or E1-2 may be admitted to this course.

113, 114. AMERICA IN THE TWENTIETH CENTURY.—A historical survey of political, economic, and social problems of twentieth-century United States. Emphasis is placed on reform movements from the Muckrakers through the Fair Deal, the emergence of the United States as a world power, and conflicting ideas and ideologies. 6 s.h. (w) ASSOCIATE PROFESSOR WATSON

121, 122. FOREIGN RELATIONS OF THE UNITED STATES, 1775 TO THE PRESENT (first semester to 1898).—With emphasis on social and economic currents as as well as on diplomacy. 6 s.h. (w) MR. SMITH

127. HISTORY OF LATIN AMERICA THROUGH THE FORMATION OF THE NATIONAL GOVERNMENTS.—3 s.h. (w) PROFESSOR LANNING

128. INTER-AMERICAN AFFAIRS.—This course treats the relations of the Latin-American states with each other and with the United States with the design of explaining the current significance of Latin America. Chief emphasis is placed upon social problems and movements common to all the republics and upon the role of the United States in Latin-American affairs, including such topics as American intervention; contributions of the United States to Latin-American life in such matters as public health; Pan-Americanism; Pan-Hispanism; foreign penetration and ideologies; the cultural and commercial aspects of the Good Neighbor Policy; Latin-American states in the World War. 3 s.h. (w) PROFESSOR LANNING

131, 132. THE DEVELOPMENT OF THE MAJOR SOUTH AMERICAN POWERS.—Political, social, and economic history of Argentina, Brazil, and Chile since independence. First semester to 1890; second semester to the present day. 6 s.h. ASSISTANT PROFESSOR TISCHENDORF

135, 136. EUROPE IN THE TWENTIETH CENTURY.—Political and economic developments in Europe since 1900. First semester to 1929; second semester to the present day. 6 s.h. (w) ASSOCIATE PROFESSOR COLTON

137, 138. FOREIGN RELATIONS OF THE EUROPEAN POWERS.—European diplomacy and Europe's position in the world since 1870, with an introductory survey of diplomatic institutions since the Renaissance. 6 s.h. (w) ASSISTANT PROFESSOR SCOTT

139, 140. NINETEENTH-CENTURY EUROPE.—With special attention to Germany and Austria-Hungary, this course will emphasize the development of European nationalism and the clash of freedom and authority. 6 s.h. (w) ASSISTANT PROFESSOR HOLLYDAY

141, 142. CHINA AND JAPAN IN MODERN TIMES.—A history of their response to the West between 1750 and the present, with some attention to their cultural background. 6 s.h. DR. GILLIN

153, 154. THE HISTORY OF THE SOUTH.—A study, beginning in the Colonial period, of the development of the Southern part of the United States with particular attention to its distinctive characteristics and institutions and to their influence in shaping Southern attitudes toward major questions of national policy. 6 s.h. (w) PROFESSOR WOODY

161, 162. RUSSIA FROM IVAN THE TERRIBLE TO PRESENT TIMES.—Topics treated include the rise of the Russian state and its relations with Poland and Turkey; the agrarian problem and the rise of industry; the Russian Revolution; the political, agricultural and industrial policies of the Soviet Union; the role of the U.S.S.R. in World War II; and its postwar policies. 6 s.h. (w) PROFESSOR CURTISS

163, 164. REFORM AND POLITICS IN NINETEENTH CENTURY AMERICA.—First semester: the coming of the Civil War with emphasis on the reform movements of the Jackson era, the anti-slavery crusade and national politics to 1865. Second semester: reform and politics from the Reconstruction era to the Farmers' Revolt of the 1890's. 6 s.h. (w) ASSISTANT PROFESSOR DURDEN

FOR SENIORS AND GRADUATES

Students may receive credit for either semester of a hyphenated course at the 200-level without taking the other semester if they obtain written permission from the instructor and either the Director of Undergraduate or the Director of Graduate Studies.

203-204. THE UNITED STATES, 1850-1900.—The rise of sectionalism, secession, war-time problems of the Union and Confederacy, political and economic adjustments of Reconstruction, the status of the Negro, the New South, problems of capital and labor, the agrarian revolt, political parties and reform, the Spanish-American War. 6 s.h. (w) PROFESSOR WOODY

212. RECENT INTERPRETATIONS OF UNITED STATES HISTORY.—A course designed to encourage a critical evaluation of major issues in United States history through examination of recent interpretations of key problems. 3 s.h. (w) ASSOCIATE PROFESSOR WATSON

213-214. THE OLD SOUTH.—Political thought and party trends from Jefferson to Calhoun; agriculture, slavery, expansion; commerce, manufacturing, transportation; urban life, religion, education; the rise of Southern nationalism. 6 s.h. (w) PROFESSOR WOODY

215-216. THE FOREIGN POLICY AND DIPLOMACY OF THE UNITED STATES.—The work in the first semester, covering the period 1775-1877, deals with such topics as the origin and development of basic foreign policies; isolation from Europe; paramount interests in Latin America, including the Monroe Doctrine; international co-operation in the Far East. The work in the second semester, covering the period since 1877, deals with topics such as the rise of the new "manifest destiny"; beginnings of American imperialism in Latin America and the Far East; the failure of traditional neutrality in the first World War; postwar conflicts between isolation and collective security; involvement in the second World War. 6 s.h. (w) PROFESSOR CLYDE

221-222. THE AGE OF THE RENAISSANCE.—The decline of characteristic features of medieval civilization and the rise of modern European institutions with particular attention to intellectual movements from Dante to Erasmus. 6 s.h. (E) ASSOCIATE PROFESSOR NELSON

223-224. THE OLD REGIME AND THE FRENCH REVOLUTION, 1661-1815.—A study of social, political, and intellectual revolutions in continental Europe, centering on France and giving special attention to successive interpretations of historical change. 6 s.h. ASSOCIATE PROFESSOR ACOMB

225-226. THE AGE OF THE REFORMATION.—A survey of European civilization from 1500 through the Peace of Westphalia. 6 s.h. (E) ASSOCIATE PROFESSOR NELSON

227, 228. EUROPE IN THE NINETEENTH CENTURY.—A study, beginning with the career of Napoleon Bonaparte, of the forces and personalities influential in the nineteenth century. Emphasis in the first semester is on the problems of the biographer; in the second, on those of a student of national communities. 6 s.h. (w) PROFESSOR PARKER

229. RECENT INTERPRETATIONS OF MODERN EUROPEAN HISTORY.—A course designed to develop the ability to appraise critical historical issues through the study and discussion of recent interpretations of key historical problems in modern European history. 3 s.h. PROFESSOR PARKER

231-232. THE HISPANIC COLONIES AND REPUBLICS IN AMERICA.—The development of the Iberian states as colonizing powers, the conquest of America, the Spanish treatment of the Indian, the contest between Spain and other European nations over America, the independence movement, the struggle for stable government, the rise of liberalism with special emphasis upon Mexico from the Revolution of 1910 to the present, and basic inter-American developments. 6 s.h. (w) PROFESSOR LANNING

233-234. THE INSTITUTIONAL, CULTURAL, AND SOCIAL HISTORY OF HISPANIC AMERICA.—The first semester of this course deals with subject races, the development of mixed breeds, the governmental system, the Church and the Inquisition, and Spanish culture with emphasis upon university subjects. In the second semester the work deals with the political ideas of the wars of independence, revolution and dictatorship, the rise of public education, public health, land reform, and proletarian movements. 6 s.h. (w) Professor Lanning

235, 236. EUROPEAN EXPANSION OVERSEAS (1415-1898).—A course dealing primarily with the processes by which European institutions were carried overseas and modified in a new environment. In the first semester the emphasis is on Portuguese, Dutch, French, and English experience in the Far East and the Americas to 1763. In the second semester, attention is paid to the emergence of independent centers of European culture, as in Brazil, and to the revivals of mercantile imperialism of the new German, French, Italian and British empires of the nineteenth century. 6 s.h. (w) Professor Manchester

241-242. THE FAR EAST.—The history of the Western impact on Eastern Asia in the nineteenth and twentieth centuries. Emphasis is placed on such matters as commercial and colonial expansion, the opening of China and Japan, the development by the Western Powers and Japan of colonial, imperialistic, and nationalistic interests, and the rise of Communist power in Asia. 6 s.h. (w) Professor Clyde

243-244. THE UNITED STATES AND THE FAR EAST.—An historical analysis of American relations with the peoples of Eastern Asia during the nineteenth and twentieth centuries. 6 s.h. (w) Professor Clyde

245-246. WAR IN THE MODERN WORLD.—This course is concerned with the relations between warfare and modern political, economic, and social conditions. Special attention is given to the development of British and American military methods and to the events of the American Civil War and the two World Wars. The work in the first semester deals with Clausewitz's theories of warfare and the period from the introduction of gunpowder to 1871; in the second semester there is a more detailed analysis of recent land, sea, and air warfare. 6 s.h. (w) Professor Ropp

249-250. SOCIAL AND INTELLECTUAL HISTORY OF THE UNITED STATES.—The interplay of ideas and social practice through the examination of attitudes and institutions in such fields as science and technology, law, learning, and religion. 6 s.h. (w) Associate Professor Holley

251-252. RECENT EUROPEAN HISTORY.—A history of political and economic developments in Europe since 1870. 6 s.h. (w) Associate Professor Colton
Not open to students who have had 135, 136.

259-260. THE EMERGENCE OF THE NEW SOUTH, 1865 TO THE PRESENT.—Reconstruction, industrialization, and agrarian revolt; changing status of the Negro; the South's role in the reform movements headed by Theodore Roosevelt, Woodrow Wilson, and Franklin D. Roosevelt. 6 s.h. Assistant Professor Durden

261-262. RUSSIA IN THE TWENTIETH CENTURY.—A study of the background of the Revolution of 1917 followed by an analysis of the history and policies of the Soviet state. 6 s.h. (w) Professor Curtiss

263-264. AMERICAN COLONIAL HISTORY AND THE REVOLUTION, 1607-1789.—The founding and institutional development of the English colonies; the background, progress, and results of the Revolution. 6 s.h. (w) Professor Alden

267-268. ENGLAND FROM EDWARD III TO ANNE.—The transition from medieval to modern England, the English Renaissance, and the political, social, and intellectual problems of the seventeenth century. 6 s.h. (w)
Not open to students who have had 107. Associate Professor Ferguson

269. BRITISH HISTORY FROM 1714 TO 1867.—The interrelationship of the leadership of such men as Walpole, Chatham, Pitt, and Peel with war, revolution,

and social institutions; the rise of the cabinet system; the Industrial Revolution; imperial changes; and reform. 3 s.h. (w) PROFESSOR HAMILTON

270. GREAT BRITAIN AND THE COMMONWEALTH OF NATIONS, 1867 TO THE PRESENT.—A history of Great Britain at the height of her world dominance and beyond, her oceanic empire, and the evolution of that empire into a unique world-wide Commonwealth of Nations. 3 s.h. (w) PROFESSOR HAMILTON

UNDERGRADUATE SEMINARS

Prerequisites: History 1, 2 (or 51, 52) and History 91, 92 (except for History 273-274) and the consent of the instructor.

271-272. SENIOR SEMINAR IN HISTORY.—A course designed to introduce qualified students to advanced methods of historical research and writing and to the appraisal of critical historical issues. Open only to seniors. This course, when taken by a history major, would be in addition to the 6 semester hours required in 200-level courses of the History Department. 6 s.h.
ASSOCIATE PROFESSOR HOLLEY

The following courses are designed to offer opportunities for reading and historical investigation in significant problems. Juniors as well as seniors may apply for admission to these courses, and are urged to do so if they expect to be candidates for graduation with distinction in history or if they expect to practice-teach in their senior year.

273-274. THE BACKGROUND OF MODERN EUROPEAN CIVILIZATION.—Topics in intellectual-cultural history of Europe and adjacent areas from the earliest records to 1648. The work aims to develop critical appreciation and maturity of judgment through using primary sources. 6 s.h. (E)
ASSOCIATE PROFESSOR NELSON

275-276. TWENTIETH-CENTURY EUROPE.—6 s.h. (w)
ASSOCIATE PROFESSOR COLTON
Students may not receive credit for this course and 251-252.

277-278. PROBLEMS IN AMERICAN INTELLECTUAL HISTORY.—6 s.h. (w)
ASSOCIATE PROFESSOR HOLLEY
Students may not receive credit for this course and 249-250.

279-280. THE PROGRESSIVE ERA THROUGH THE NEW DEAL.—6 s.h. (w)
ASSOCIATE PROFESSOR WATSON

DEPARTMENTAL MAJOR

Prerequisites: The Introductory Course in History (1-2 or 51-52).

Major Requirements: Students desiring to take a major in history are required to elect, in addition to History 1-2 or 51-52, 24 semester hours in the Department, including six semester hours in the senior year from courses in the 200 group. Students are urged to take History 91-92; in any case those wishing to take the more advanced courses in American history should elect History 91-92 in the sophomore or junior year.

COURSES APPROVED FOR RELATED WORK IN HISTORY

Aesthetics, Art, and Music: History of Art; History of Music
Economics, but not the courses listed under business administration and accounting except those in economic geography
Education, 54, 104, 225
English and American Literature, but not composition, speech, and drama
German, Greek, Latin, Russian, and the Romance Languages: the literature courses numbered 100 or above that are not primarily conversation or composition courses.
Greek, Latin, except those courses that are primarily grammar or composition
Philosophy, except 48
Political Science
Psychology, 91, 100, 101

Religion, especially those numbered above 100
Sociology

The Department offers work leading to graduation with distinction. See the section on Honors.

LATIN AND ROMAN STUDIES

PROFESSOR ROGERS, CHAIRMAN AND DIRECTOR OF UNDERGRADUATE STUDIES; DR. WOMBLE; MR. CAULFIELD

Students who wish by study in English to make acquaintance with Roman antiquity from either a literary or an historical approach are afforded that opportunity through the courses in translated Latin Literature (111, 112), and Roman History (131, 132).

1-2. COURSE FOR BEGINNERS.—Forms, vocabulary, pronunciation and syntax are emphasized the first semester. They are followed by the reading and translating of Caesar's *Gallic War* the second semester. An effort is made to promote rapid development of ability to read easy Latin with satisfaction. 6 s.h. (w)
MR. CAULFIELD

63. CICERO'S ORATIONS.—Four orations including the *Manilian Law* and *Archias* are read, and attention is paid to prose style. Prerequisite: Latin 1-2, or equivalent. 3 s.h. (E) MR. CAULFIELD

64. VERGIL'S *AENEID*.—Selections from Books I-VI, to the amount of four books or more, will be read and translated, due attention being paid to prosody. 3 s.h. (E) MR. CAULFIELD

91. LATIN PROSE.—Selections from prose authors or Cicero's *De Senectute* and *De Amicitia*, or selected books of Livy's history, with special emphasis on developing competence in reading Latin. 3 s.h. (E) DR. WOMBLE

92. LATIN POETRY.—Selections from the greatest Latin poets, especially Horace's *Odes*. 3 s.h. (E) DR. WOMBLE

97. SIGHT READING IN CLASSICAL LATIN.—One period of an hour per week devoted to practice in the reading of Latin of the classical period; designed to train students to read with facility. 1 s.h. (E) DR. WOMBLE

98. SIGHT READING IN MEDIAEVAL LATIN.—One period of an hour per week devoted to reading interesting mediaeval prose and poetry. Prerequisite: at least one of the following courses: Latin 63, 64, 91, 92, and 97, or an equivalent. 1 s.h. (E) DR. WOMBLE

101. TACITUS.—Interesting and historically important selections from the *Annals* or the *Histories* of Tacitus are read, with attention to the literary style and the value of the historical narrative. 3 s.h. (E) PROFESSOR ROGERS

102. JUVENAL.—Juvenal's literary satire forms the basis of the course. 3 s.h. (E)
PROFESSOR ROGERS

103. CICERO.—Selections from one of the major philosophical works, with attention to Cicero's philosophical thought and literary style. 3 s.h. (E)
PROFESSOR ROGERS

104. LUCRETIUS.—A study of Lucretius as a philosophical thinker and as a poetic artist. 3 s.h. (E) PROFESSOR ROGERS

105-106. LATIN PROSE COMPOSITION.—Recommended to students who are pursuing courses 63, 64, 91, 92, and 97, and may at the discretion of the instructor be required of such students. 4 s.h. (E)

111, 112. ROMAN LITERATURE IN ENGLISH TRANSLATION.—Selective readings in Latin Literature in English translation with emphasis on the drama, lyric poetry, and the varied contributions of Cicero to literature in the first term, and upon the epic, the satire, and the novel in the second semester. (No language credit.) 6 s.h. (E) DR. WOMBLE

131, 132. HISTORY OF ROME.—A survey of the history of the Roman State from its beginnings to the death of Justinian; its expansion; development of its constitution and public administration; social, legal, political and economic problems of perennial life and interest; the background and setting of Christianity's rise and growth. (This course carries no language credit. No knowledge of Latin is required for admission.) 6 s.h. (E) PROFESSOR ROGERS

211-212. ROMAN ORATORY.—A reading course in the history and development of Roman oratory, based for the most part on Cicero's *Brutus* and the *Dialogus* of Tacitus. 6 s.h. (E) PROFESSOR ROGERS

DEPARTMENTAL MAJOR

Prerequisite: Latin 1-2, 63-64, or equivalent.

Major Requirements: 24 semester hours which must include courses 91, 92, 101, 102, 103-104, and 6 semester hours in courses at the 200-level.

Recommended Courses: Latin 105-106, Composition, and 131, 132, Roman History.

Related Work: Eighteen hours of related work, elected usually in Greek, Philosophy, Art, Romance Languages, and English. Majors who contemplate graduate work are reminded of the necessity of Greek, German, and French for such study.

MATHEMATICS

PROFESSOR GERGEN, CHAIRMAN; PROFESSOR DRESSEL, DIRECTOR OF UNDERGRADUATE STUDIES; PROFESSOR HICKSON, SUPERVISOR OF FRESHMAN INSTRUCTION; PROFESSORS CARLITZ, ELLIOTT, MURRAY, ROBERTS, AND THOMAS; ASSISTANT PROFESSORS GALLIE, MCLEOD, REYNOLDS, SHOENFIELD, AND WARNER; VISITING ASSISTANT PROFESSOR WYLIE; RESEARCH INSTRUCTORS DEBRUNNER AND HARRIS; MRS. STONE; MESSRS. BERNSTEIN, DICE, FREIBURGHOUSE, GALBRAITH, HOOD, HORSFIELD, KEELER, MARCY, AND WAGNON

The following program of courses in Mathematics is planned for 1960-1961. Fall: 11, 21, 51, 52, 53, 111, 113, 135, 139, 221, 227, 235, 271, 285, 291; Spring: 21, 22, 52, 53, 112, 114, 131, 136, 140, 222, 228, 236, 272, 286, 292.

11. ALGEBRA AND TRIGONOMETRY.—Factoring, fractions, linear equations in one or several unknowns, introduction to coordinates and graphing, exponents and radicals, numerical trigonometry. Prerequisite: two units of college preparatory mathematics. 3 s.h. (W & E) STAFF

21, 22. INTRODUCTORY CALCULUS.—Real and complex numbers, rectangular and polar coordinates, graphs, trigonometric and inverse trigonometric functions, logarithmic and exponential functions, conic sections, limits, derivatives, maxima and minima, methods of integration, areas, volumes. Prerequisite: two and one-half units of college preparatory mathematics. Mathematics 21 is prerequisite for Mathematics 22. 6 s.h. (W & E) STAFF

The three calculus courses listed below, Mathematics 51, 52, 53, formerly offered in the Department, are scheduled for elimination from the Departmental program. Mathematics 51 will not be offered after the fall semester of 1960-1961, Mathematics 52 after the spring semester of 1960-1961, Mathematics 53 after the fall semester of 1961-1962. Only those students who have completed a course in analytic geometry prior to the fall semester of 1960-1961 should register for Mathematics 51.

51. CALCULUS I.—Differentiation of elementary functions, curve tracing, maxima and minima, motion, curvature, indeterminate forms. Prerequisite: Analytic geometry. 3 s.h. (W) STAFF

52. CALCULUS II.—Integration of elementary functions, areas, solids of revolution, length of arc, surfaces of revolution, centroids, moments of inertia, pressure. Prerequisite: Mathematics 51. 3 s.h. (W) STAFF

53. CALCULUS III.—Introduction to solid analytic geometry, partial differentiation, multiple integrals, series. Prerequisite: Mathematics 52. 3 s.h. (W) STAFF

63, 64. INTERMEDIATE CALCULUS.—Moments, centroids, indeterminate forms, Taylor's formula, approximation of integrals, improper integrals, infinite series, vectors and solid analytic geometry, partial derivatives, multiple integrals, introduction to ordinary differential equations. Prerequisite: Mathematics 22 for 63; and 63 for 64. 6 s.h. (w) STAFF

111. APPLIED MATHEMATICAL ANALYSIS I.—Ordinary and partial linear differential equations with constant coefficients, Fourier series and their applications, vectors. Not open to students who have had Mathematics 131. Prerequisite: Mathematics 53 or 64. 3 s.h. (w) STAFF

112. APPLIED MATHEMATICAL ANALYSIS II.—Complex variables, residues, conformal mapping, matrices, Laplace and Fourier Transforms and their applications. Prerequisite: Mathematics 53 or 64. 3 s.h. (w) STAFF

113, 114. MODERN ALGEBRA.—Vector spaces, linear transformations, matrices, elementary theory of groups, rings, and fields. Prerequisite: Mathematics 52 or 63 for 113; and 113 for 114. 6 s.h. (w) ASSISTANT PROFESSOR WARNER

131. ELEMENTARY DIFFERENTIAL EQUATIONS.—Solution of differential equations of elementary types; formation and integration of equations arising in applications. Not open to students who have had Mathematics 111. Prerequisite: Mathematics 52 or 63. 3 s.h. (w) STAFF

135, 136. PROBABILITY AND STATISTICS.—Permutations and combinations, total and compound probability, Bayes' formula, Bernouilli's theorem, discrete distributions, central values, moments and mathematical expectation, law of large numbers, probabilities in continuum, continuous distributions, sampling distributions, confidence limits, tests of hypotheses, and analysis of variance. Prerequisite: Mathematics 52 or 63 for 135; and 135 for 136. 6 s.h. (w) PROFESSOR HICKSON

139, 140. ADVANCED CALCULUS.—Multiple integrals and Jacobians, infinite series, power series, differential equations, vector analysis, line and surface integrals, Green's theorem, Stoke's theorem, improper integrals. Prerequisite: Mathematics 53 or 64 for 139; and 139 for 140. 6 s.h. (w) PROFESSOR ELLIOTT

FOR SENIORS AND GRADUATES

205. ALGEBRA FROM AN ADVANCED STANDPOINT.—This course is designed for teachers of secondary school mathematics. Topics considered are real and complex numbers, elementary number theory, scales of notation, Diophantine problems, continued fractions, summation of series, binomial theorem, interest and annuities. 3 s.h. (w) (Retired Officers Program only.) PROFESSOR THOMAS

206. PLANE GEOMETRY FROM AN ADVANCED STANDPOINT.—Postulates for Euclidean geometry, duality, non-Euclidean geometries, geometric rigor, theory of linear and angular measurements, accuracy of logarithmic tables and calculations, nomograms and other computing aids. 3 s.h. (w) (Retired Officers Program only.) PROFESSOR THOMAS

211. FINITE MATHEMATICS.—Compound statements, sets and subsets, partitions and counting, probability theory, vectors and matrices, linear programming and the theory of games, applications to behavioral science problems. Prerequisite: Mathematics 53 or 64. 3 s.h. (w) (Retired Officers Program only.) PROFESSOR GERGEN

212. MATHEMATICAL ANALYSIS.—Elements in the theory of functions, principally for real variables. Sequences and series, continuity, differentiation, integration. 3 s.h. (w) (Retired Officers Program only.) PROFESSOR GERGEN

215, 216. ANALYSIS.—Introduction to set theory, construction of real and complex numbers beginning with the Peano postulates, elementary topology of real and complex numbers, properties of continuous functions, derivatives, mean value theorem, Riemann integral, fundamental theorem of integral calculus. Prerequisite: Mathematics 53 or 64 for 215; and 215 for 216. 6 s.h. (w) STAFF

221. DIGITAL COMPUTER.—History of computers; number representation, information storage, logical arithmetic; components and organization of computing

systems; coding and programming; programmed arithmetics, function and functional subroutines, interpretive routines, compilers; error analysis. Two lectures, one laboratory. Prerequisite: Mathematics 22 or 52 3 s.h. (w)
ASSISTANT PROFESSOR GALLIE

222. INTRODUCTION TO NUMERICAL ANALYSIS.—Introduction to numerical analysis, error analysis, real and complex roots of equations, finite difference methods and theory of interpolation, numerical differentiation and integration, numerical integration of ordinary and partial differential equations, simultaneous equations and matrix inversion. Two lectures, one laboratory. Prerequisite: Mathematics 53 or 64 and 221. 3 s.h. (w) ASSISTANT PROFESSOR GALLIE

227, 228. THEORY OF NUMBERS.—Congruences, arithmetic functions, compound moduli, quadratic reciprocity, Gauss sums, quadratic forms, sums of squares. Prerequisite: Mathematics 53 or 64 for 227; and 227 for 228. 6 s.h. (w)
PROFESSOR CARLITZ

229, 230. ALGEBRAIC NUMBERS.—Ideals, unique factorization, divisors of the discriminant, determination of the class number. Prerequisite: Mathematics 113 for 229; and 229 for 230. 6 s.h. (w) PROFESSOR CARLITZ

235, 236. ABSTRACT ALGEBRA.—Groups, fields, rings, matrices, quadratic and bilinear forms, general Galois theory, hypercomplex systems. Prerequisite: Mathematics 53 or 64 for 235; and 235 for 236. 6 s.h. (w) PROFESSOR CARLITZ

247, 248. ARITHMETIC OF POLYNOMIALS.—Field theory, detailed study of finite fields, special polynomials and functions, valuation theory, the zeta function. Prerequisite: Mathematics 235 or consent of the instructor for 247; and 247 for 248. 6 s.h. (w) PROFESSOR CARLITZ

253, 254. DIFFERENTIAL GEOMETRY.—Curves and surfaces in three dimensional Euclidean Space, applicability, differential parameters, Riemannian geometry of n-space. Prerequisite: Mathematics 53 or 64 for 253; and 253 for 254. 6 s.h. (w) PROFESSOR THOMAS

271, 272. INTRODUCTORY TOPOLOGY.—Topological properties of Euclidean spaces, set-theoretic and combinatorial methods. Prerequisite: Mathematics 53 or 64 for 271; and 271 for 272. 6 s.h. (w) ASSISTANT PROFESSOR SHOENFIELD

285. MATHEMATICAL ANALYSIS FOR CHEMISTS AND PHYSICISTS.—Vectors, line and surface integrals, tensors, complex variables, differential and integral equations. Prerequisite: Mathematics 53 or 64. 3 s.h. (w)
PROFESSOR DRESSEL

286. MATHEMATICAL ANALYSIS FOR CHEMISTS AND PHYSICISTS.—Wave equation, Fourier series, heat equation, telegraphic equations, Legendre polynomials, Bessel functions, Schrödinger's equation. Prerequisite: Mathematics 53 or 64. 3 s.h. (w) PROFESSOR DRESSEL

287, 288. FOUNDATIONS OF MATHEMATICS.—Propositional calculus, predicate calculus, axiomatized number theory. Gödel completeness and incompleteness theorems. Recursive functions; hierarchies; constructive ordinals. Set theory; consistency of the axiom of choice. Prerequisite: Mathematics 53 or 64, or consent of instructor for 287; and 287 for 288. 6 s.h. (w) ASSISTANT PROFESSOR SHOENFIELD

291, 292. THEORY OF FUNCTIONS.—Limits, implicit functions, power series, double series, Cauchy's theorem and its applications, residues, Riemann surfaces, conformal mapping. Prerequisite: Mathematics 53 or 64 for 291; and 291 for 292.
PROFESSOR GERGEN

DEPARTMENTAL MAJOR

For the A.B. degree:

Prerequisite: Mathematics 21, 22.

Major and Related Work: **42 semester hours.**

Major Requirements: Mathematics 63, 64 and 18 semester hours in courses in mathematics numbered above 100.

Related Work: 18-24 semester hours of course work, ordinarily in the following departments: chemistry, economics and business administration, philosophy, physics.

For the B.S. degree:

Prerequisite: Mathematics 21, 22.

Major and Related Work: 48 semester hours.

Major Requirements: Mathematics 63, 64 and 18 semester hours in courses in mathematics numbered above 100.

Related Work: 14-24 semester hours of course work in the natural sciences.

The Department offers work leading to graduation with distinction. See the section on Honors.

MEDICAL SCIENCE

These courses in medical science have been approved by the Faculty Council as appropriate for the Bachelor's degree.

M201. ANATOMY AS RELATED TO LOCOMOTION.—The part of the body concerned with locomotion and posture will be dissected completely, whereas the thoracic, abdominal and pelvic organs, and the deeper structures of the head will be taught by means of audio-visual aids and prosections. September to January. Prerequisites: One year each of biology, chemistry, and physics. 6 s.h.

PROFESSORS MARKEE AND EVERETT; ASSOCIATE PROFESSORS BECKER AND DUKE

203. HUMAN PHYSIOLOGY.—A course in human physiology in which the functions of all organ systems are covered. Special emphasis is given to the study of neuro-muscular and cardiovascular functions. Lectures, laboratory experiments and demonstrations, and conferences. Limited to 16 students. Primarily for physical therapy students. Prerequisites: Chemistry 1-2 and Zoology 1-2. 6 s.h.

ASSISTANT PROFESSOR WAYLAND HULL AND STAFF

MUSIC

See Department of Aesthetics, Art, and Music

NAVAL SCIENCE

PROFESSOR AINSWORTH, CAPTAIN, U. S. NAVY, CHAIRMAN; ASSOCIATE PROFESSOR MCCANTS COMMANDER, U. S. NAVY, DIRECTOR OF UNDERGRADUATE STUDIES; ASSISTANT PROFESSOR MCCARTHY, LIEUTENANT COMMANDER, U. S. NAVY, SUPERVISOR OF FRESHMAN INSTRUCTION; ASSISTANT PROFESSORS KLINE, LIEUTENANT COMMANDER, U. S. NAVY, BAYSINGER, LIEUTENANT COMMANDER, U. S. NAVY, AND HILL, LIEUTENANT, U. S. NAVY; ASSISTANT PROFESSOR EZELL, MAJOR, U. S. MARINE CORPS

Standardized titles and numbers for courses are established by the Bureau of Naval Personnel for use at the 52 NROTC institutions. The first digit indicates the year of the course; the second digit indicates whether semester or quarter (0 for semester, 1 for quarter); the third digit indicates the semester or quarter of school year in which offered. Specialized courses for Marine Corps officer candidates are indicated by the letter "M" after the number, and substitute for the basic course of the same number.

NS 101. NAVAL ORIENTATION.—History of navy regulations, naval customs and courtesies considered basic to further study of Naval Science. Introduction to carrier, air, surface, undersea, and amphibious warfare; basic types, characteristics, capabilities, and limitations of naval vessels; deck seamanship; naval formations and maneuvers. 3 s.h. (w)

COMMANDER MCCANTS; LIEUTENANT COMMANDER MCCARTHY; LIEUTENANT COMMANDER BAYSINGER

NS 102. NAVAL HISTORY.—Naval history relating the rise and fall of sea power to other aspects of world history as a basis for understanding the role of navies in the world today. 3 s.h. (w)

COMMANDER MCCANTS; LIEUTENANT COMMANDER MCCARTHY

91. INTRODUCTORY PSYCHOLOGY.—See page 106 of this *Bulletin* for course description. This is a required University course for all NROTC midshipmen.

NS 202. NAVAL WEAPONS.—A comprehensive study of the basic scientific principles of Naval Ordnance including guns, torpedoes, mines, rockets and guided missiles. 3 s.h. (w) LIEUTENANT COMMANDER BAYSINGER

NS 301. NAVAL ENGINEERING.—Principles of steam engineering as related to naval installations for main propulsion and auxiliaries; future trends in naval engineering plants, ship stability and buoyancy in the practice of ship design and damage control; a general understanding of Diesel Engines. 3 s.h. (w)
LIEUTENANT COMMANDER KLINE

NS 301M. EVOLUTION OF THE ART OF WAR.—A survey of the evolution of weapons, strategy, tactics and material; illustration of the classic principles of war by a study of selected battles and campaigns; a summary of the development of U. S. military and foreign policy. 3 s.h. (w) MAJOR EZELL
For Marine Corps Candidates.

NS 302. NAVIGATION.—Magnetic and gyro compasses; principles of chart construction; dead reckoning; piloting; nautical astronomy including a study of the actual and apparent motion of the earth, celestial coordinates, time systems, the astronomical triangle, identification of stars and planets; solutions of observations for lines of position; complete day's work in practical navigation. 3 s.h. (w)
LIEUTENANT COMMANDER KLINE

NS 302M. MODERN BASIC STRATEGY AND TACTICS.—Modern tactical principles and techniques, especially on the small unit level, illustrated by contemporary historical examples; development of a general understanding of strategy. 3 s.h. (w) MAJOR EZELL
For Marine Corps Candidates.

NS 401. NAVAL OPERATIONS.—Tactics and operations including concepts of combined fleet, force, and group operations; watchstanding duties afloat; relative motion and its application to tactical maneuvering; electronic navigation; communications from ship to ship through fleet levels; Rules of the Nautical Road. 3 s.h. (w) LIEUTENANT HILL

NS 401M. AMPHIBIOUS WARFARE.—History and development of amphibious operations and organization; analyses of amphibious operations of World War II and of the Korean action. 3 s.h. (w) MAJOR EZELL
For Marine Corps Candidates.

NS 402. PRINCIPLES AND PROBLEMS OF LEADERSHIP.—A study of principles and techniques which will assist the newly commissioned officer in performing his leadership functions in the Navy. This includes the principles and problems of human relations and applies these principles to decision making and management planning. 3 s.h. (w) LIEUTENANT HILL

NS 402M. AMPHIBIOUS WARFARE, PART II.—Further study of selected amphibious operations; Uniform Code of Military Justice; leadership. 3 s.h. (w)
For Marine Corps Candidates. MAJOR EZELL

PHILOSOPHY

PROFESSOR BAYLIS, CHAIRMAN; ASSOCIATE PROFESSOR WELSH, ACTING DIRECTOR OF UNDERGRADUATE STUDIES; ASSISTANT PROFESSOR WILSON, SUPERVISOR OF FRESHMAN INSTRUCTION; PROFESSOR NEGLEY; ASSOCIATE PROFESSORS CLARK AND PEACH; DR. BINKLEY

The undergraduate program in the Department of Philosophy is designed to acquaint students with the content and the structure of philosophical theory in various areas. Discussion is encouraged so that the student can engage actively in the philosophical examination of problems.

Course offerings fall into two general categories: the systematic and the historical. In a systematic treatment, the organization of a course is primarily in terms of the problems presented by the subject-matter of that course, as in logic, ethics, metaphysics, etc. In historical courses, attention is directed more to the order of de-

velopment in the thought of a particular philosopher (Plato, Aristotle, Kant, etc.), or in a historical period. In all courses, reading of the works of philosophers will acquaint the student with the important and influential contributions to the definition and solution of philosophical issues.

The problems raised in philosophy in respect to the various fields of the arts and sciences involve questions which are not normally given attention in those particular disciplines. In the consideration of such problems, therefore, it is expected that the student will acquire some understanding and perspective of the major areas of man's intellectual endeavor. In this sense, philosophical comprehension is an essential part of a student's learning and education.

The following courses fulfill minimum uniform requirements:

Literature, Art, Music, and Philosophy (six hours required)—Philosophy 49, 91, 93, 94, 97, 98, 109, 117.

Natural Sciences (eleven hours required)—Three of the eleven hours may be fulfilled by Philosophy 48, 103, or 104.

48. LOGIC.—A study of the conditions of effective thinking and clear communication. Examination of the basic principles of *deductive* reasoning (making explicit the implications of statements) and of *inductive* reasoning (the formulation and testing of hypotheses on the basis of experience and experiment). Open to freshmen and sophomores only. 3 s.h. (E & W)
ASSOCIATE PROFESSORS CLARK AND WELSH; DR. BINKLEY

49. ETHICS.—A philosophical consideration of such basic ethical concepts as right and wrong, good and evil, freedom and duty, together with a study of some of the major types of ethical theory. Open to freshmen and sophomores only. 3 s.h. (E & W) PROFESSORS BAYLIS AND NEGLEY; ASSOCIATE PROFESSOR WELSH; DR. BINKLEY

91. INTRODUCTION TO PHILOSOPHY.—A systematic and historical examination of the major problems of knowledge, morals, and metaphysics. 3 s.h. (E & W) (Open to freshmen with a *B* average.) STAFF

93. HISTORY OF PHILOSOPHY; ANCIENT AND MEDIEVAL.—A study of the major philosophers of the period with special reference to the continuity of their thought. 3 s.h. (E & W) ASSISTANT PROFESSOR WILSON

94. HISTORY OF PHILOSOPHY: MODERN.—A study of the major philosophers of the period with special reference to the continuity of their thought. 3 s.h. (E & W) ASSOCIATE PROFESSOR PEACH; DR. BINKLEY

97. POLITICAL AND SOCIAL PHILOSOPHY.—Discussion of the fundamental principles of political and social organization, with particular attention to democratic philosophy, corporate theory, and Marxist ideology. Open only to sophomores and juniors. 3 s.h. (W) PROFESSOR NEGLEY

98. SOCIAL IDEALS AND UTOPIAS.—Reading of selected Utopias; analysis of the value-structures and political principles of these ideal societies. 3 s.h. (W)
PROFESSOR NEGLEY

101. PHILOSOPHY OF RELIGION.—A philosophical examination of selected concepts and doctrines of religion. 3 s.h. (E) DR. BINKLEY

103. SYMBOLIC LOGIC.—Detailed analysis of deduction and of deductive systems. Open to sophomores only by permission of instructor. 3 s.h. (E)
ASSOCIATE PROFESSOR CLARK AND ASSISTANT PROFESSOR WILSON

104. PHILOSOPHY OF SCIENCE.—The principal philosophical and methodological problems in contemporary science. 3 s.h. (E) ASSOCIATE PROFESSOR CLARK

109. PHILOSOPHY OF LANGUAGE.—A philosophical analysis of problems arising in the study of language and symbolism. Topics include: the nature of language, sign-using behavior, theories of meaning, types of discourse (scientific, mathematical, poetic), definition, ambiguity, metaphor. 3 s.h. (E)
ASSOCIATE PROFESSOR WELSH

110. EPISTEMOLOGY.—A treatment of the problems of truth and knowledge; of *a priori* and empirical statements; and of theories of perception and probability. 3 s.h. (E) ASSISTANT PROFESSOR WILSON; DR. BINKLEY

111. METAPHYSICS.—Traditional treatments of the mind-body problem; dualism; phenomenalism and materialism; rival theories of causation, space and time. 3 s.h. (E) ASSISTANT PROFESSOR WILSON; DR. BINKLEY

117. HISTORY OF ETHICS.—The development of ethical thought in the West; the interaction between culture and ethical theory, with special reference to the Greek city-state, Roman law, the Renaissance, the Reformation and the rise of modern science. Readings in the great ethical philosophers. 3 s.h. (E) ASSOCIATE PROFESSOR WELSH

FOR SENIORS AND GRADUATES

202. PHILOSOPHY OF ART.—A study of some fundamental issues in aesthetics, with particular reference to the fields of literature, music, and painting. Problems discussed include: the nature and purposes of the arts; meaning in the arts; art and morality; the role of standards in art criticism; aesthetic judgment; interpretation and evaluation. 3 s.h. (E) ASSOCIATE PROFESSOR WELSH

203. CONTEMPORARY ETHICAL THEORIES.—Critical discussion and evaluation of the ethical views of twentieth century British and American philosophers. 3 s.h. (E) PROFESSOR BAYLIS; DR. BINKLEY

205. THE PHILOSOPHY OF HISTORY.—Discussion of the method, metaphysical implications, and influence of interpretations of history; Hegel, Marx, Spengler, Toynbee. 3 s.h. (W) PROFESSOR NEGLEY

208. POLITICAL PHILOSOPHY.—Analysis of the structure of social organization with particular reference to the nature of political and legal institutions. 3 s.h. (W) PROFESSOR NEGLEY

211. PLATO.—An examination of Plato's views with respect to knowledge, reality, and the state. 3 s.h. (E)

217. ARISTOTLE.—An analysis of Aristotle's views with respect to knowledge, reality, and the state. 3 s.h. (E)

219. KANT.—Reading and discussion of his philosophy, with some attention to historical continuity. 3 s.h. (W) PROFESSOR NEGLEY

225. BRITISH EMPIRICISM.—A critical study of the writings of Locke, Berkley, and Hume, with special emphasis on problems in the theory of knowledge. 3 s.h. (E) ASSOCIATE PROFESSOR PEACH

227. CONTINENTIAL RATIONALISM.—A critical study of the writings of Descartes, Spinoza, and Leibnitz, with special emphasis on problems in the theory of knowledge and metaphysics. 3 s.h. (E) ASSOCIATE PROFESSOR PEACH

228. RECENT AND CONTEMPORARY PHILOSOPHY.—A critical study of outstanding philosophical views from Schopenhauer to the present. 3 s.h. (E) ASSOCIATE PROFESSORS PEACH AND WELSH

229. AMERICAN PRAGMATISM.—Studies in the philosophy of Pierce, James, Dewey, and Mead. 3 s.h. (E) ASSOCIATE PROFESSOR WELSH

232. SPECIAL PROBLEMS IN THE PHILOSOPHY OF SCIENCE.—Selected topics concerning the methods of the sciences and the philosophy of science. 3 s.h. (E) ASSOCIATE PROFESSOR CLARK

241. LOGIC.—Fundamental problems of logic. 3 s.h. (E) ASSOCIATE PROFESSOR CLARK AND ASSISTANT PROFESSOR WILSON

250. PHILOSOPHICAL ANALYSIS.—A critical study of recent and contemporary essays in philosophical analysis, and an evaluation of the nature, methods, and results of this movement. 3 s.h. (E) PROFESSOR BAYLIS; ASSOCIATE PROFESSOR CLARK; ASSISTANT PROFESSOR WILSON

252. METAPHYSICS.—A critical and evaluative study of rival metaphysical theories and their bases. Analysis of the fundamental metaphysical categories and of metaphysical methods. 3 s.h. (E)

PROFESSOR BAYLIS; ASSOCIATE PROFESSOR CLARK; ASSISTANT PROFESSOR WILSON

291, 292. CRITICAL PHILOSOPHY.—The analysis of basic philosophical concepts and beliefs with a view to critical evaluation and constructive emendation of them. Emphasis on the practice as well as the principles of philosophical criticism and problem solving. 3 s.h. each. Enrollment only by permission of the department. 291 is ordinarily prerequisite for 292. (E) THE GRADUATE STAFF

DEPARTMENTAL MAJOR

Philosophy 48 (Logic) is recommended for all those intending to major in philosophy.

Major Requirements: Twenty-four semester hours in philosophy in courses numbered above 50 including the following:

Philosophy 93 and 94.

Philosophy 117, or 203, or 208.

6 semester hours in Philosophy senior-graduate courses.

Related Work: Six hours minimum in each of two departments approved by the Philosophy adviser. Courses may not be those primarily open to freshmen. There is no restriction in principle as to departments in which related work may be taken, and the approval of the Philosophy adviser is required only to insure some coherence in the program of major and related work as a whole.

The Department offers work leading to graduation with distinction. See the section on Honors.

PHYSICS

PROFESSOR NIELSEN, CHAIRMAN AND ACTING DIRECTOR OF UNDERGRADUATE STUDIES; PROFESSOR CARPENTER, SUPERVISOR OF FRESHMAN INSTRUCTION; PROFESSORS GORDY, LEWIS, NEWSON, AND SPONER; ASSOCIATE PROFESSORS BLOCK, GREULING, AND WILLIAMSON; ASSISTANT PROFESSOR MEYER; VISITING LECTURERS R. L. EDWARDS AND S. GITHENS; VISITING ASSISTANT PROFESSORS BILPUCH, DUNCAN, AND ROBL; PART-TIME VISITING INSTRUCTORS BEVINGTON, KOVACS, FLETCHER, TILLEY, AND WISSEMAN; MR. PULLMAN

A student wishing to major in physics should arrange to complete the necessary mathematics as soon as possible.

1-2. INTRODUCTORY PHYSICS.—This course traces historically and experimentally the development of the important principles of physics. This course is open to freshmen, sophomores and juniors and meets the general science requirement. Three hours of recitation and one two-hour laboratory each week. 8 s.h. (W)

PROFESSORS CARPENTER AND NIELSEN; VISITING LECTURER GITHENS; AND ASSISTANTS

41-42. GENERAL PHYSICS.—This course treats the basic principles of general physics in a more quantitative manner than Physics 1-2. It meets in a thorough way the physics requirement for entrance into the study of either medicine or engineering, and is well suited for the general science student. This course is not open for credit for students who have completed Physics 1-2. Three lecture-recitations and one three hour laboratory period each week. Prerequisites: Mathematics 21, 22 or equivalent (Mathematics 21, 22 may be taken concurrently). 8 s.h. (W)

PROFESSOR CARPENTER, ASSOCIATE PROFESSOR WILLIAMSON, VISITING LECTURER EDWARDS, AND STAFF AND ASSISTANTS

125. INTERMEDIATE PHYSICS—MECHANICS.—The course covers in a thorough manner the elements of mechanics. Three recitations per week. Prerequi-

sites: Physics 1-2 or 41-42 or equivalent, and a course in differential and integral calculus. Math. 52 may be taken concurrently. 3 s.h. (w) PROFESSOR NIELSEN

126. INTERMEDIATE PHYSICS—ELECTRICITY.—The elements of electricity and magnetism. Three lectures and one three-hour laboratory per week. Prerequisites: Physics 125 or equivalent work approved by the instructor, and differential and integral calculus. 4 s.h. (w) PROFESSOR LEWIS

161, 162. MODERN PHYSICS.—Review of electromagnetic fields, relativity, quantum phenomena, atomic and molecular spectra, solids, and nuclear physics. Three lectures each week. Prerequisites: Physics 41-42, Mathematics 52. 161 is prerequisite for 162. 6 s.h. (w) VISITING LECTURER EDWARDS; MR. BEVINGTON

171. ELECTRONICS.—A.C. circuits, transients, fundamentals of vacuum tubes and electron physics, basic electronic circuits. Three lectures and one three-hour laboratory each week. Prerequisite: Physics 126 or equivalent work approved by the instructor. 4 s.h. (w) PROFESSOR LEWIS

176. INTERMEDIATE PHYSICS—THERMODYNAMICS AND KINETIC THEORY.—The elements of thermodynamics and kinetic theory and elementary statistical mechanics. Three recitations per week. Prerequisites: Physics 125 or equivalent work approved by the instructor, and differential and integral calculus. 3 s.h. (w) VISITING LECTURER EDWARDS

A course in general college physics, Physics 125 and 126 or equivalent validated by examination, and a course in differential and integral calculus are prerequisites to all courses numbered 200 and above.

201, 202. MECHANICS.—The fundamental principles of Newtonian mechanics; general dynamics of systems of particles and rigid bodies; the methods of LaGrange and Hamilton; generalized mechanics. 6 s.h.
VISITING ASSISTANT PROFESSOR ROBL; ASSOCIATE PROFESSOR GREULING

213, 214. CONTEMPORARY PHYSICS.—A course which covers the fundamental concepts and the experimental basis of modern physics. Three lectures each week. 6 s.h. (w) PROFESSORS SPONER AND LEWIS

217, 218. ADVANCED PHYSICS LABORATORY.—Measurements involving the fields of mechanics, electricity, magnetism, heat, sound, optics and modern physics. 2-6 s.h. (w) PROFESSORS NIELSEN AND LEWIS

219. ELECTRICITY AND MAGNETISM.—Fundamentals of electricity and magnetism. Physical optics. Electromagnetic waves. 3 s.h. (w) PROFESSOR LEWIS

220. ADVANCED ELECTRONICS.—Vacuum tubes and solid state devices, advanced circuit analysis. Three lectures and one three-hour laboratory each week. 4 s.h. (w) PROFESSOR LEWIS

225, 226. ELEMENTARY INVESTIGATIONS.—The aim of this course is to provide training in the laboratory and library methods of physical research. Properly qualified students may conduct elementary investigations under the supervision of a member of the staff. 3-6 s.h. (w) THE STAFF

DEPARTMENTAL MAJOR

A. for the A.B. degree:

Prerequisites: Physics 1-2 or 41-42 or equivalent, and Mathematics 21, 22.

Major Requirements: Eighteen to 24 semester hours in physics including Physics 125, 126, 171, and 176 or equivalent.

Related Work: Eighteen to 24 semester hours from the following courses: Mathematics 51, 52, 53 and 131, and Chemistry 1-2.

B. For the B.S. degree:

Prerequisites: Physics 1-2 or 41-42 or equivalent, and Mathematics 21, 22 or equivalent.

Major Requirements: Twenty-four to 34 semester hours in physics including Physics 125, 126, 171, and 176 or equivalent.

Related Work: Fourteen to 24 semester hours from the following courses: Mathematics 51, 52, 53 and 131, and Chemistry 1-2.

The Department offers work leading to graduation with distinction. See the section on Honors.

POLITICAL SCIENCE

PROFESSOR RANKIN, CHAIRMAN; PROFESSOR HALLOWELL, DIRECTOR OF UNDERGRADUATE STUDIES; PROFESSORS BRAIBANTI, COLE, CONNERY, AND WILSON; VISITING PROFESSORS MAYO AND PARTRIDGE; ASSOCIATE PROFESSORS SIMPSON AND SINDLER; VISITING ASSOCIATE PROFESSOR WEBB; ASSISTANT PROFESSORS CHEEK, HALL, HANSON, HAVENS, LEACH, AND PROCTOR; VISITING ASSISTANT PROFESSORS GILLESPIE AND NELSON

The general objective of the Department of Political Science is to acquaint students with the theory and practice of government and politics at the local, state, national and international levels. While primary attention is focused upon the American political and administrative system, emphasis is also placed upon a comparative study of the political institutions and movements of thought peculiar to the nations of Europe, Latin America and the Far East. The student's attention is also directed to the problems encountered in international organization, politics and law. The development of political theories from Plato to the present day is an essential part of the department's course offerings. Methods of study include the descriptive, the historical, the legal, the comparative and the philosophical.

Directing its effort to an intelligent understanding of the contemporary world and of the responsibilities which are laid upon citizens of a democracy, the Department of Political Science shares the general objectives of a liberal arts education. While the department does not aim at vocational education, the knowledge it seeks to impart should be useful to anyone contemplating a career in the government service or politics.

Students intending to major in the department should take Political Science 11-12 or 61-62. Ordinarily one of them must be taken before proceeding to more advanced work in the department. This rule may be waived with the consent of the Director of Undergraduate Studies. Sophomores who have completed Political Science 11-12 may take Political Science 62 for credit.

The advanced courses are divided into three major groups but no sequence of courses beyond the introductory course is prescribed. The student would be well advised, however, to select some courses from each group.

The Senior Seminars are designed to provide an opportunity for majors in the department to pursue independent study and research.

INTRODUCTORY COURSES

11-12. THE AMERICAN SYSTEM OF GOVERNMENT.—An introductory study of the principles and operation of the American government in the light of the present world position of the United States. The first semester is devoted to the institutions and politics of American government; the second semester to such issues as civil liberties, American foreign policies and government policy toward agriculture, labor and business. (Only open to Freshmen.) 6 s.h. (E & W)

ASSOCIATE PROFESSOR SINDLER; ASSISTANT PROFESSORS CHEEK AND HALL; VISITING ASSISTANT PROFESSOR NELSON

[Students who complete 11 in the spring semester should thereafter take course 62 instead of 12.]

61-62. AMERICAN AND COMPARATIVE POLITICAL SYSTEMS.—An introduction to the theory and practice of modern government. The first semester is devoted to the study of American constitutional democracy. Topics examined include federal-state relations, the separation and interrelationships of the executive, legislative and judicial branches of government, judicial review, the role of political parties and public opinion, the formulation and execution of domestic and foreign policy, civil liberties. The second semester is devoted to a study of constitutional democracy in Great Britain and France with emphasis upon the similarities and differences be-

tween those systems and our own. Detailed attention is also given to an examination of the theory and practice of totalitarian dictatorship as exemplified in the U.S.S.R. 6 s.h. (E & W)

PROFESSOR CONNERY; VISITING PROFESSOR MAYO; ASSOCIATE PROFESSOR SIMPSON; VISITING ASSOCIATE PROFESSOR WEBB; ASSISTANT PROFESSORS CHEEK, HALL, HANSON, HAVENS, LEACH, AND PROCTOR; VISITING ASSISTANT PROFESSOR GILLESPIE

[Not open to freshmen. Students who have taken 11-12 may not take 61 for credit but may take 62.]

POLITICAL THEORY AND COMPARATIVE GOVERNMENT

123. INTRODUCTION TO POLITICAL PHILOSOPHY.—A course devoted to the reading and discussion of selected political classics including Plato's *Republic,* Aristotle's *Ethics* and *Politics* and other works as time permits. 3 s.h. (W)

PROFESSOR HALLOWELL AND ASSISTANT PROFESSOR LEACH

133. THE POLITICS OF SOUTHEAST ASIA.—An analysis of the development of government in Thailand, Vietnam, Burma, Malaya, Indonesia and the Philippines. Attention will be given to the Islamic, Buddhist and other indigenous cultures of these nations as well as to the colonial administrations of the Netherlands, France, Britain, and the United States. Emphasis will be on the problems involved in the emergence of various constitutional forms in these nations with the advent of independent statehood. 3 s.h. (W) PROFESSOR BRAIBANTI

136. MAJOR EUROPEAN GOVERNMENTS.—A general introductory survey of the governments of Great Britain, France, Germany, Italy, and the Soviet Union. Special attention is given to constitutional developments, the organization and ideologies of political parties, and current political problems. 3 s.h. (W) [Not open to students who have taken Political Science 62 but open to all others without prerequisite.] PROFESSOR COLE

151. GOVERNMENTS AND POLITICS OF MEXICO AND THE CARIBBEAN AREA.—A study of their contemporary governments, political problems and international relations. 3 s.h. (W) ASSISTANT PROFESSOR PROCTOR

152. THE GOVERNMENTS AND POLITICS OF SOUTH AMERICA.—The constitutional development, governmental organization, inter-American co-operation and political problems of the principal South American states. 3 s.h. (W)

ASSISTANT PROFESSOR PROCTOR

211. POLITICAL INSTITUTIONS OF THE FAR EAST.—An analysis of the ideas underlying the development of government in Japan, China, and Korea. Study of the writings of Lao-tse, Confucius and the sacred books of Buddhism and Shinto. Particular attention is given to the theory of Confucian bureaucracy, the Taikwa Reform, the development of the Tokugawa administrative state, the constitutional reforms of Sun Yat-sen in China and of the Meiji Era in Japan. 3 s.h. (W)

PROFESSOR BRAIBANTI

223. POLITICAL THOUGHT TO THE SEVENTEENTH CENTURY.—A survey from the time of Plato to the close of the sixteenth century; Graeco-Roman, Patristic and Germanic thought; individualism and cosmopolitanism; effect of the Church-State controversy and the conciliar movement: medieval constitutionalism; legislative sovereignty. 3 s.h. (W) PROFESSORS WILSON AND HALLOWELL

224. MODERN POLITICAL THEORY.—An historical survey and philosophical analysis of political theory from the beginning of the seventeenth to the middle of the nineteenth century. Attention is given to the rise of liberalism, the Age of Enlightenment, the romantic and conservative reaction, idealism and utilitarianism. 3 s.h. (W) PROFESSOR HALLOWELL; VISITING PROFESSOR MAYO

225. COMPARATIVE GOVERNMENT AND POLITICS.—A comparative study of modern political institutions and processes, with particular attention to European constitutional government and politics. 3 s.h. (W)

PROFESSOR COLE; VISITING PROFESSOR PARTRIDGE

226. COMPARATIVE GOVERNMENT AND POLITICS.—A comparative study

of modern political institutions and processes, with particular attention to European totalitarian and authoritarian political systems. 3 s.h. (w)
PROFESSOR COLE; ASSISTANT PROFESSOR PROCTOR

229. RECENT AND CONTEMPORARY POLITICAL THEORY.—The rise of positivism and its impact upon modern political thought, the origins of socialism, Marxism and its variants, socialism in the Soviet Union, nationalism, Fascism and National Socialism, the crisis in modern democracy, Christianity and the social order. 3 s.h. (w) PROFESSOR HALLOWELL

231. AMERICAN POLITICAL THEORY.—An analysis of the main currents in American political thought from colonial beginnings to the present day, with emphasis upon the development of liberalism in America. 3 s.h. (w)
PROFESSOR HALLOWELL; VISITING PROFESSOR MAYO

235. THE BRITISH COMMONWEALTH.—An analysis of the political relationships between the members of the Commonwealth and a comparative study of the political systems of the Commonwealth countries, with particular reference to Canada. 3 s.h. (w) PROFESSOR COLE

AMERICAN GOVERNMENT AND PUBLIC ADMINISTRATION

125. AMERICAN POLITICAL PARTIES AND PRACTICAL POLITICS.—A study of the historical development, organization, and methods of political parties in the United States. 3 s.h. (w) ASSOCIATE PROFESSOR SIMPSON

129. GROUPS IN AMERICAN POLITICS.—A study of the composition, methods, and policies of organized groups as they participate in the creation of public opinion and in the formulation of public policy. Attention will be focused on recent national policy in the areas of agriculture, business, labor, education, welfare, foreign affairs, and on the roles that groups play in the formulation of these policies. 3 s.h. (w) ASSOCIATE PROFESSOR SINDLER

137. POLITICAL BEHAVIOR IN ELECTIONS.—The behavioral approach will be used to examine decision-making in the political process. Attention will be focused on the major factors that affect the outcome of elections, such as the characteristics of the American voter, the conduct of campaigns, the influence of propaganda and public relations techniques, and the influence of campaign finance. 3 s.h. (w) ASSOCIATE PROFESSOR SINDLER

138. POLITICAL BEHAVIOR IN POLICY MAKING.—A study of the major factors that come into play in the making of governmental policy decisions. Special attention will be paid to the role of pressure groups and the methods of their lobbyist representatives, to the effects of pressures from constituents, and to the pressures of the executive and legislative branches upon each other 3 s.h. (w)
ASSISTANT PROFESSOR HAVENS

141. PUBLIC ADMINISTRATION.—An introduction to the role of administration in the governmental process considering principles of administrative organization, methods of administrative control, personnel and fiscal management. In general the study of the organizational and administrative problems encountered by any government agency charged with carrying out a public policy. 3 s.h. (w)
ASSISTANT PROFESSOR HALL; VISITING ASSISTANT PROFESSOR NELSON

146. LEGISLATION.—A study of the composition and structures of legislative bodies and of the legislative process with attention to procedure, methods, techniques, delegation of discretion, and the use of controls. 3 s.h. (w)
ASSOCIATE PROFESSOR SIMPSON

161. GOVERNMENT AND PLANNING.—A study of special areas in government planning. The semester's work is divided into three parts: city planning—land use and zoning, housing and urban redevelopment; resource planning—the governmental problems involved in planning for the conservation and use of natural resources, with special attention given to multi-purpose development of the river and its watershed; and a brief consideration of proposals and developments in the general field of economic planning. 3 s.h. (w) ASSISTANT PROFESSOR HANSON

164. GOVERNMENT CONTROL OF THE SOCIAL AND ECONOMIC ORDER.—A study of governmental and administrative problems in the regulation of trade and the enforcement of the anti-trust laws, the regulation of transportation and communications and the role of the government in collective bargaining. Consideration is also given to the philosophic aspects of the general growth of government control of industry. 3 s.h. (w) ASSISTANT PROFESSOR HANSON

174. POLITICAL IMPLICATIONS OF ECONOMIC LEGISLATION.—A study of political and sectional alignments in the passage of tariff, farm, railway, New Deal and other economic legislation. 3 s.h. (w) ASSOCIATE PROFESSOR SIMPSON

190. PUBLIC PERSONNEL ADMINISTRATION.—Principles, techniques, problems, and functions of government personnel administration; formal and informal organization for personnel management; comparison of public employment philosophies, policies and services with general personnel management, including recruitment, promotion, training, classification, morale and discipline, compensation, and retirement of public employees. 3 s.h. (E) ASSISTANT PROFESSOR CHEEK

191. STATE AND LOCAL GOVERNMENT TODAY.—Problems in state, county and city government including the administration of government services such as education, public welfare, law enforcement; inter-governmental relationships; administrative reorganization; methods of popular control; and the reconstruction of state and local government so as to meet present-day needs. 3 s.h. (E)
ASSISTANT PROFESSORS CHEEK AND LEACH

207. AMERICAN CONSTITUTIONAL LAW AND THEORY.—A study of leading principles of American government, as developed through judicial interpretation of the Constitution. 3 s.h. (w) PROFESSOR RANKIN

209. PROBLEMS IN STATE AND LOCAL GOVERNMENT IN THE UNITED STATES.—A study of the historical development of state and local governments, their present organization and subdivisions, and their relation to each other. Special attention is given to the position of the states in the federal union through the study of federal-state, inter-state, and state-local relations. 3 s.h. (w)
PROFESSOR RANKIN

230. AMERICAN POLITICAL INSTITUTIONS.—A study of the formation and development of institutions of the national government in the United States, with historical and analytical treatment. Among other topics this course is concerned with the Constitutional Convention of 1787, and the development of Congress, the Presidency, and the Supreme Court. 3 s.h. (w) PROFESSOR RANKIN

234. CIVIL-MILITARY RELATIONSHIPS IN AMERICAN GOVERNMENT.—A consideration of the role of the military in American government both in theory and in practice. Special emphasis will be given to formal civil-military structural arrangements for determining policies, such as the National Security Council, and to the degree of civilian control within the military establishment. 3 s.h. (w)
PROFESSOR CONNERY

241. ADMINISTRATIVE MANAGEMENT.—An advanced course in public administration with special attention being given to the development of scientific management, its application to government in the United States and a consideration of current problems in organization, procedures, work simplification, and management improvement. 3 s.h. (w)
PROFESSOR CONNERY; VISITING ASSOCIATE PROFESSOR WEBB

242. NATIONAL ADMINISTRATION.—A study of the administrative organization, working concepts and procedures of the United States Government, illustrated through the operations of the Bureau of the Budget. 3 s.h. (w)
PROFESSOR CONNERY

246. GOVERNMENT ADMINISTRATION AND PUBLIC POLICY.—Through use of the laboratory and case study techniques, a consideration of the types of administrative problems that the United States Government encounters in the field of public policy, and their possible solution. 3 s.h. (w) PROFESSOR CONNERY

275. THE NATIONAL PARTY SYSTEM.—An intensive examination of selected facets of American national political parties, such as: relationships between

presidential and congressional politics, the politics of national conventions, recent foreign policy and party alignments, and the controversy over party government. 3 s.h. (w) ASSOCIATE PROFESSOR SINDLER

276. COMPARATIVE STATE PARTIES AND POLITICS.—A selective analysis of party patterns in the states, including such topics as: classification schemes for state party systems, the impact of various nominating procedures on party organization, relationships between national and state politics, and the influence of party system on the operation of state government, with special attention to the South. 3 s.h. (w) ASSOCIATE PROFESSOR SINDLER

291. PROBLEMS OF MUNICIPAL GOVERNMENT.—An analysis of problems relating to the structural system and activities of municipalities in the United States. 3 s.h. (w) PROFESSOR RANKIN

292. MUNICIPAL ADMINISTRATION.—A study of principles and methods relating to municipal administration in the United States. 3 s.h. (w) PROFESSOR RANKIN

INTERNATIONAL LAW AND RELATIONS

121. ELEMENTS OF INTERNATIONAL RELATIONS.—Analysis of international politics, of the foundations of national power, and of international cooperation, with emphasis upon attempted solutions of the central problems of international security. 3 s.h. (w) ASSISTANT PROFESSOR PROCTOR

122. MODERN INTERNATIONAL POLITICS.—A survey of politics leading to the two World Wars with emphasis upon present day conditions resulting from these major conflicts. 3 s.h. (w) ASSISTANT PROFESSOR PROCTOR

Students who have received credit for History 135-136 may not receive credit for this course.

131. SURVEY OF FAR EASTERN POLITICS.—An introductory survey of international politics in Eastern Asia and the Western Pacific; the rise of Japan as a modern state; China's struggle for political unity, independence and national development. 3 s.h. (Formerly Political Science 111) (w) PROFESSOR BRAIBANTI

132. CONTEMPORARY PROBLEMS IN FAR EASTERN POLITICS.—The impact of World War II and its aftermath on political institutions and economic structures in the Pacific area. 3 s.h. (Formerly Political Science 112) (w) PROFESSOR BRAIBANTI

158. CONTROL OF AMERICAN FOREIGN POLICY.—A consideration of the forces which are responsible for the formulation of American foreign policy, and a study of the important factors which have influenced contemporary United States policy in the major areas of the world. The course includes an analysis of the respective roles of the President, Congress, Department of State, and the United Nations, as well as military and public opinion. 3 s.h. (w)

212. INTERNATIONAL POLITICS OF THE FAR EAST.—An analysis of the relations of China, Japan, and Korea *inter se* and with outside powers, with emphasis upon changing power relationships within the Asian cultural sphere. 3 s.h. (w) PROFESSOR BRAIBANTI

221. INTERNATIONAL PUBLIC ORGANIZATION.—A study of the structure and functioning of the United Nations organs, of related specialized agencies such as the International Labor Organization, and of regional agencies such as the Organization of American States and the North Atlantic Treaty Organization. 3 s.h. (w) PROFESSOR WILSON

227-228. INTERNATIONAL LAW.—Elements of international law, particularly as interpreted and applied by the United States; rights and duties of states with respect to recognition, state territory and jurisdiction, nationality, diplomatic and consular relations, treaties, treatment of aliens, pacific settlement of disputes, international regulation of the use of force, and collective responsibility. 6 s.h. (w) PROFESSOR WILSON

UNDERGRADUATE SEMINARS

201. SENIOR SEMINAR IN POLITICAL SCIENCE.—A seminar intended primarily for majors in Political Science, devoted to the reading, discussion and analysis of major works in modern and contemporary political science. Students are expected to prepare papers on relevant topics for group discussions. Open only to seniors. Prerequisite: consent of the instructor. 3 s.h. (w) MEMBERS OF THE STAFF

202. SENIOR SEMINAR IN POLITICAL SCIENCE.—Intended primarily for majors in Political Science, this seminar provides an opportunity for the application of principles to current political problems. It provides a means whereby specially qualified students can make a concentrated study of some problem of their own choice. Papers are required and special attention is given to research methods and materials. Political Science 201 is recommended but not required. Open only to seniors. Prerequisite: consent of the instructor. 3 s.h. (w) PROFESSOR CONNERY

DEPARTMENTAL MAJOR

Prerequisite: Political Science 11-12 or 61-62.

Major Requirements: Eighteen semester hours of work in the Department above courses 11-12 or 61-62, including at least nine semester hours of 200 courses.

Related Work: Six hours each in two departments approved by the Political Science adviser. Courses may not be those primarily open to freshmen. Usually related work is taken in the Departments of History, Economics, Sociology, or Philosophy.

The Department offers work leading to graduation with distinction. See the section on Honors.

PSYCHOLOGY

PROFESSOR RODNICK, CHAIRMAN; PROFESSOR KIMBLE, DIRECTOR OF UNDERGRADUATE STUDIES; PROFESSORS ADAMS, COHEN, DAI, KOCH, KUDER, ZENER; ASSOCIATE PROFESSORS BANHAM, DIAMOND, GARMEZY, GUTTMAN, JONES, REICHENBERG-HACKETT; ASSISTANT PROFESSORS ALTROCCHI, BONEAU, BORSTELMANN, BREHM, DASTON, FARINA, LAKIN, MCHUGH, OBRIST, SPIELBERGER; ASSISTANT RESEARCH PROFESSOR GAFFRON; LECTURERS AXELROD, EISDORFER, GEHMAN, SHMAVONIAN; MISS HINMAN

Three or six semester hours in psychology may be used to meet the Social Science and History requirement for the A.B. degree. The courses which will meet the requirement are: Psychology 91 or Psychology 91 plus either Psychology 100 or 101.

Psychology 91 or its equivalent is a prerequisite for all other courses in psychology. Six semester hours in psychology (including Psychology 91) or special permission of the course instructor or the director of undergraduate studies are required for admission to Psychology 143, 144, 145, 146, 148, 205, 212, 215, 236, 265, and 266.

91. INTRODUCTORY PSYCHOLOGY.—An introduction to the facts, principles, and problems of normal adult psychology through a study of psychological methods as applied to motivation, emotions, perception, sensation, thinking, memory, learning, individual differences, and personality. 3 s.h. (E & W) STAFF

100. PERSONALITY AND SOCIAL BEHAVIOR.—A survey of basic psychological principles underlying the study of personality in relation to the social environment. Among the topics discussed are theories of personality, the process of socialization of the individual, factors influencing adjustment to the social environment, the interaction of culture and personality. 3 s.h. (E)
ASSISTANT PROFESSORS ALTROCCHI, MCHUGH, AND SPIELBERGER; ASSOCIATE PROFESSOR JONES

Not open to students who have had Psychology 116.

101. INTRODUCTORY SOCIAL PSYCHOLOGY.—A survey of problems, concepts and methods in the study of social relations and group behavior. Topics

to be discussed include: Psychological and socio-cultural factors in the development of motives, values and attitudes; the study of small-group behavior with emphasis on social influence and communication; prejudice and stereotypy. 3 s.h. (E) ASSOCIATE PROFESSOR JONES; ASSISTANT PROFESSOR BREHM

104. COMPARATIVE PSYCHOLOGY.—An examination of the bearing upon general psychological theory of experimental investigations of animal behavior in the fields of motivation and learning. 3 s.h. (E) PROFESSOR ADAMS

108. INTRODUCTION TO BIOLOGICAL PSYCHOLOGY.—A study of motivation, perception and adaptive behavior, both innate and learned, from the standpoint of the biological sciences. 3 s.h. (E) ASSOCIATE PROFESSOR DIAMOND

110. APPLIED PSYCHOLOGY.—Applications of psychology to problems of personnel selection, industrial efficiency, advertising and selling, and other problems of practical interest. 3 s.h. (E) ASSISTANT PROFESSOR MCHUGH

111. ADVANCED GENERAL PSYCHOLOGY.—A more intensive study of several selected problem areas in the field of general psychology with special emphasis on experimental methods and findings in the areas considered. 3 s.h. (E)
[Not offered in 1960-61.] PROFESSOR KIMBLE

116. PSYCHOLOGY OF ADJUSTMENT.—The course is planned to give an adequate understanding of problems of adjustment and mental hygiene. Lectures and discussions cover an application of the principles and findings of normal and abnormal psychology as these relate to the adjustment of the average individual in our changing society; a survey of the principles of mental hygiene; discussions of current socio-cultural trends significant for individual adjustment. 3 s.h. (E)
ASSOCIATE PROFESSOR REICHENBERG-HACKETT
Not open to students who have had Education 68 or Psychology 100.

117-118. EXPERIMENTAL AND STATISTICAL METHODS IN PSYCHOLOGY.—Study of the procedures and methods of psychological investigation through emphasis on human and animal experimentation in such areas as learning, motivation and perception. Instruction in elementary statistical techniques and their application to the analysis and interpretation of psychological data. Experiments are arranged in a sequence of increasing complexity with respect to subject matter, experimental design and statistical methods. Laboratory and lectures. 8 s.h. (E)
ASSOCIATE PROFESSOR GUTTMAN AND ASSISTANT PROFESSOR BONEAU

121. CHILD PSYCHOLOGY.—A detailed study of the practical problems of infancy and early childhood, with special emphasis upon learning, emotional development, social adjustment, and modern conceptions and methods of child training and guidance. 3 s.h. (E) ASSISTANT PROFESSOR MCHUGH

122. ADJUSTMENT OF THE PRE-SCHOOL CHILD.—Study and application of techniques of observing, recording and interpreting the behavior of the pre-school child. The course is designed to meet the needs of students interested in the personality, development and social adjustment of children; to train them in techniques of observing and interpreting the physical, emotional, and intellectual development of the individual child; the role of each child within the social structure of a play group, and a study of the development of group integration. One hour lecture and 4 hours laboratory. 3 s.h. (E)
ASSOCIATE PROFESSOR REICHENBERG-HACKETT

126. ADOLESCENT PSYCHOLOGY.—The mental, social, and emotional development of adolescence and youth will be studied, with special attention given to such topics as interests, motivations, home problems, sex differences, recreation, delinquency, and development for citizenship. Prerequisite: Psychology 121 or Education 118, or permission of the instructor. 3 s.h. (E)
ASSISTANT PROFESSOR MCHUGH

130. PRINCIPLES AND METHODS OF PSYCHOLOGICAL EVALUATION.—This is an introductory course in test methods used by psychologists in measuring and evaluating mental processes. The nature, purposes and utilization of various types of tests and psychological techniques will be discussed and demonstrated.

Among the tests to be studied will be standard scales of intelligence, verbal and performance, individual and group methods; tests of special abilities, aptitudes, attitudes and interests; personality tests, rating scales and projective methods. 3 s.h. (E) ASSOCIATE PROFESSOR BANHAM

132. THE PSYCHOLOGY OF INDIVIDUAL DIFFERENCES.—A study of the nature and causes of individual and group variations in intelligence, special abilities, social and emotional characteristics. These will be considered in relation to developmental sequence, aging factors, sex, race, biological inheritance, education and socio-economic conditions. 3 s.h. (E) ASSOCIATE PROFESSOR BANHAM

141. PERSONALITY AND BEHAVIOR DISORDER.—Behavior disorder studied from the viewpoint of the psychological principles underlying the adjustment of the deviant personality. Prerequisite: Psychology 100. Not open to students who have had Psychology 106. 3 s.h. (E)
ASSOCIATE PROFESSOR GARMEZY; ASSISTANT PROFESSOR LAKIN

143. LANGUAGE AND COMMUNICATION.—A survey of human language behavior. Topics covered will include basic units of language, language learning, various approaches to the problem of "meaning," and the role of language in human learning and perception. Each student will perform an experimental research project. Prerequisite: 6 hours of psychology or permission of the instructor. 3 s.h. (E) [Not offered in 1960-61.]

144. THE PSYCHOLOGY OF LEARNING.—A survey of the basic facts and principles of human and animal learning. Students in the course will perform an independent experiment. Prerequisite: 6 s.h. in psychology or permission of the instructor or director of undergraduate studies. 3 s.h.
PROFESSOR KIMBLE; ASSISTANT PROFESSOR BONEAU

145. EXPERIMENTAL APPROACHES TO PERSONALITY.—Experimental methods applied to personality research with emphasis upon psychological studies in such areas as anxiety, conflict and frustration. Students will perform a series of representative experiments. Prerequisite: 6 s.h. in psychology or special permission of the instructor or the director of undergradute studies. 3 s.h. (E)
ASSOCIATE PROFESSORS GARMEZY AND JONES; ASSISTANT PROFESSORS BREHM AND SPIELBERGER

148. PSYCHOLOGY OF PERCEPTION AND THINKING.—A study of the basic phenomena of perception and thinking as determined by the stimulus situation, motivation, learning and personality variables. Students will perform a series of representative experiments. Prerequisites: 6 s.h. in psychology or special permission of the instructor or the director of undergraduate studies. 3 s.h. (E)
PROFESSOR ZENER

205. SENSORY DISCRIMINATION.—The anatomy and physiology of the receptors, their pathways to the central nervous system and their central connections. The central question of the course concerns neural mechanisms for discriminating between modalities, qualities within a modality, and differences in intensity and location. 3 s.h. (E) ASSOCIATE PROFESSOR DIAMOND

207, 208. INDEPENDENT STUDY AND RESEARCH.—Independent investigations of topics of special interest. Admission requires formulation of a study plan with a faculty supervisor and approval of the director of undergraduate studies. Prerequisite 9 s.h. of Psychology. Not open to students currently enrolled in Psychology 229, 230. 6 s.h. (E) PROFESSOR KIMBLE AND STAFF

212. PHYSIOLOGICAL PSYCHOLOGY.—A survey of the interrelationships of biological and psychological factors in behavior, with particular reference to reflex action, motivation, learning and emotion. Emphasis will be placed on the relation between psychological theories and biological data. Presupposes Introductory Zoology or its equivalent. Prerequisite: 6 s.h. in psychology or special permission of the instructor or the director of undergraduate studies. 3 s.h. (E)
ASSISTANT PROFESSOR OBRIST

215. DEVELOPMENTAL PSYCHOLOGY.—Theory of personality structure and the changes it undergoes in development from infancy to old age, learning, con-

flict, character, intelligence, developmental crises, etc.; evaluation of researches on personality dynamics. Prerequisite: 6 s.h. in psychology or special permission of the instructor of the director of undergraduate studies. 3 s.h. (E) PROFESSOR ADAMS

229, 230. INTRODUCTION TO RESEARCH.—A senior research seminar for advanced students. The student conducts an original investigation under staff supervision. A formal written report of the study will be required. Group discussions of significant research areas. Prerequisites: Participation by departmental invitation only; restricted to senior majors who have maintained a B average in all psychology courses. Students graduating with distinction in psychology will be selected from among registrants in this course. 6 s.h. (E)
ASSOCIATE PROFESSOR JONES

236. THEORETICAL PSYCHOLOGY.—This course will be devoted to the analysis of techniques of theory construction in psychology. The discussion of these methodological issues will be coordinated with the analysis of concrete formulations in contemporary psychological theory. Prerequisite: 6 s.h. in psychology or special permission of the instructor or the director of undergraduate studies. 3 s.h. (E) PROFESSOR KOCH

242. MEASUREMENT OF APTITUDES, INTEREST AND ACHIEVEMENT.—A study of the theories and principles of psychological measurement as applied to aptitude, interest and achievement testing. Prerequisite: 12 hours of psychology or educational psychology (6 hours of which may be taken concurrently). 3 s.h.
PROFESSOR KUDER

265. FUNDAMENTAL STATISTICAL APPLICATIONS IN PSYCHOLOGICAL RESEARCH.—Introduction to probability and the use of statistics in description and hypothesis testing in psychology including the following applications: correlational techniques, chi-square and t tests, distribution-free tests and one-way analysis of variance. Prerequisite: Psychology 117-118 or equivalent. 3 s.h.
ASSISTANT PROFESSOR BONEAU

266. ADVANCED STATISTICAL APPLICATIONS IN PSYCHOLOGICAL RESEARCH.—The basic theory and applications of analysis of variance techniques to complex experimental designs will be covered. Additional advanced techniques, including factor analysis, will be introduced. Prerequisite: Psychology 265 or equivalent. 3 s.h. ASSISTANT PROFESSOR BONEAU

DEPARTMENTAL MAJOR

Prerequisite: Psychology 91 or equivalent.

Major Requirements: For A.B. degree, 24 semester hours in psychology including: Psychology 91 and 117-118, and at least one course numbered above 140.

For B.S. degree, 24 semester hours in psychology including: Psychology 91, 108, 117-118 and at least two courses numbered above 140.

Related Work: 18 semester hours which may include certain courses in chemistry, economics, education, English, mathematics, philosophy, physics, political science, sociology-anthropology and zoology.

The Department offers work leading to graduation with distinction. See the section on Honors.

RELIGION

ASSOCIATE PROFESSOR PRICE, CHAIRMAN; ASSOCIATE PROFESSOR BRADLEY, DIRECTOR OF UNDERGRADUATE STUDIES; ASSISTANT PROFESSOR SALES, SUPERVISOR OF FRESHMAN INSTRUCTION; ASSOCIATE PROFESSORS HENRY, MANSCHRECK AND PHILLIPS; ASSISTANT PROFESSORS DANIELS, JONES, LANGFORD, AND OSBORN; DR. WINTERMUTE; MISS ROGERS; MESSRS. JAMES AND WILSON

The purpose of the undergraduate program of instruction in religion is to make the student aware of the influence of religion in the history of mankind and in the contemporary world, and to help him appreciate its significance in his own expe-

rience. Attention is centered on the Bible, the history and thought of Christianity, and the development of other religious traditions. In addition to the basic courses designed to fulfill the University requirement in religion, advanced courses are offered to meet the needs of specially interested students. In every case the student is encouraged to consider carefully his own religious convictions, to the end that he may reach a more intelligent understanding of his rôle in the world and of his relation to God.

The uniform course requirement in religion may be met in one of the following ways: (a) by completing, in the freshman year, Religion 1-2; (b) by completing, in the sophomore year or later, Religion 51-52; (c) by completing, in the sophomore year or later, Religion 55 and one other course selected from those numbered 60-99.

Students who have fulfilled the uniform course requirement in religion are eligible to elect any course numbered 100 or above, except those for which additional prerequisites are prescribed. Courses numbered below 100 may not be taken by those who have completed the uniform course requirement in religion.

1-2. THE ENGLISH BIBLE.—A comprehensive survey of the books of the Old and New Testaments. The literature is examined in the light of its origin in the history and religion of the people of the Bible, in order that its theological significance in its own day and in ours may be understood. Open only to freshmen. 6 s.h.
STAFF

51-52. THE ENGLISH BIBLE.—A survey of the Old and New Testaments, similar to Religion 1-2 but adapted to the capabilities of sophomores, juniors, and seniors. Not open to freshmen, or to students who have received credit for Religion 1-2. 6 s.h. STAFF

55. THE RELIGION OF THE BIBLE.—An introduction to the historical and critical study of the Old and New Testaments, which considers the principal persons, events, ideas, and practices contained in the Biblical record, and their significance for the present time. Not open to freshmen, or to students who have received credit for Religion 1-2 or 51-52. 3 s.h.
ASSOCIATE PROFESSORS BRADLEY AND PRICE; ASSISTANT PROFESSOR DANIELS; DR. WINTERMUTE

65. JESUS: THE MAN AND HIS MESSAGE (formerly Religion 114).—A detailed examination of the Gospel records, for the purpose of recovering the person and mission of Jesus. Attention will be given to conceptions of Christ in the history of the Church, and to his contemporary significance. Prerequisite: Religion 55. 3 s.h. ASSOCIATE PROFESSOR PHILLIPS; ASSISTANT PROFESSOR SALES

85. INTRODUCTION TO CHRISTIAN ETHICS (formerly Religion 91).—A brief analysis of the Biblical and historical bases for the Christian understanding of man's moral situation, followed by a study of the social implications of Christianity in such areas of life as marriage, race, the political and economic order, etc. Consideration is given to the relation of Christian ethics to moral philosophy. Prerequisite: Religion 55. 3 s.h. ASSISTANT PROFESSORS LANGFORD AND OSBORN

93. SURVEY OF THE WORLD'S LIVING RELIGIONS.—An introductory course designed to acquaint the student with the problems and methods of the study of world religions. After a brief consideration of religion in primitive culture, the world's living religions are dealt with in terms of historical development and the beliefs, practices, and contemporary importance of each. Prerequisite: Religion 55. 3 s.h. ASSOCIATE PROFESSOR BRADLEY

111. THE PROPHETS OF THE OLD TESTAMENT (formerly Religion 103).—A study of the origin and rise of the prophetic movement, the message of the prophets in their historical setting, the contribution of this movement to the Biblical view of God and history, and the significance of the prophets for today. 3 s.h. ASSISTANT PROFESSOR SALES; DR. WINTERMUTE

120. RELIGIOUS QUESTS OF THE GRECO-ROMAN WORLD.—The religious movements in the Hellenistic age which influenced the rise of Christianity: the various developments in post-exilic Judaism; Persian dualism; the Greek mystery cults; Stoic philosophy; and emperor worship. 3 s.h. ASSISTANT PROFESSOR SALES

121. THE MISSION AND MESSAGE OF JESUS (formerly Religion 116).—An analysis and interpretation of the Gospels, designed to afford the student a fuller understanding of Jesus and his mission. Not open to students who have received credit for Religion 65. 3 s.h.
ASSOCIATE PROFESSOR PRICE; ASSISTANT PROFESSOR DANIELS

123. THE LIFE AND LETTERS OF PAUL.—A study of the available sources for the life of Paul, his rôle in the expansion of the Christian movement, the most important aspects of his thought, and his continuing influence. 3 s.h.
ASSISTANT PROFESSOR DANIELS

124. THE EARLY CHURCH FROM PAUL TO IRENAEUS (formerly Religion 94).—Early Christian history through the second century. Special attention is given to Christianity's relation to Rome, and to the developing organization, ministry, and theology of the Church. 3 s.h. ASSISTANT PROFESSOR SALES

131. HISTORY OF CHRISTIANITY FROM THE EARLY CHURCH THROUGH THE REFORMATION.—A study of events, trends, personalities, and interpretations that have shaped Christianity from the time of the early Church through the sixteenth century, intended to acquaint the student with the Christian heritage and to contribute to his understanding of contemporary Christianity. 3 s.h.
ASSOCIATE PROFESSOR MANSCHRECK

133. HISTORY OF CHRISTIANITY SINCE THE REFORMATION.—A study of events, trends, personalities, and interpretations which have shaped Christianity since the Reformation, with emphasis upon those which contribute to an understanding of the contemporary religious situation. 3 s.h.
ASSOCIATE PROFESSOR MANSCHRECK

135. CHRISTIAN BIOGRAPHY.—A study of the development of Christian thought and practice as reflected in the lives and writings of such key persons as Augustine, Luther, and Wesley. 3 s.h. ASSOCIATE PROFESSOR MANSCHRECK

137. PROTESTANTISM IN AMERICA.—A study of representative men, movements, and thought in American Protestantism to 1918. 3 s.h.
ASSISTANT PROFESSOR JONES

138. CONTEMPORARY RELIGIONS IN THE UNITED STATES (formerly Religion 134).—Judaism, Catholicism, and Protestantism are studied with reference to their distinctive beliefs and practices. A comparison is made of common and dissimilar features. 3 s.h. ASSOCIATE PROFESSOR PHILLIPS

140. CHRISTIAN BELIEFS (formerly Religion 192).—An introductory study of important Christian teachings concerning God, Jesus Christ, sin and salvation, etc., intended to serve as a basis for the student's evaluation of his own religious concepts. 3 s.h. ASSISTANT PROFESSOR LANGFORD

144. PROBLEMS OF RELIGIOUS THOUGHT.—A study of the relation of belief in God to various other types of knowledge and experience, such as the research of natural and social scientists and the facts of suffering, human tragedy, and evil. 3 s.h. ASSISTANT PROFESSOR LANGFORD

149. CURRENT INTERPRETATIONS OF CHRISTIANITY.—Contemporary types of Christian thought as seen through the writings of such leading representatives as Karl Barth, John Baillie, Paul Tillich, and Reinhold Niebuhr. 3 s.h.
ASSISTANT PROFESSOR OSBORN

152. CHRISTIANITY AND CONTEMPORARY SOCIAL PROBLEMS (formerly Religion 132).—The Christian's responsibility in relation to existing social, economic, and political conditions, studied in the light of the Bible, social pronouncements of the churches, and the insights of key Christian thinkers of the past and present. 3 s.h. ASSISTANT PROFESSOR OSBORN

156. CHRISTIAN MARRIAGE AND THE FAMILY (formerly Religion 170).—Marriage and the family in American society studied from the Christian perspective. Attention will be given to the teachings of the churches and of psychologists and sociologists concerning courtship and marriage, sex, parent-child relationships, mixed marriages, and divorce. 3 s.h. ASSOCIATE PROFESSOR PHILLIPS

160. CHRISTIAN EDUCATION.—A study of the educational work of the Church, with emphasis upon the philosophy, objectives and functions of Christian education. 3 s.h. ASSISTANT PROFESSOR DANIELS

175. NON-CHRISTIAN RELIGIONS OF THE MODERN WORLD (formerly Religion 182).—An examination of the beliefs of Islam and the religions of India, China, and Japan. Emphasis will be placed upon the sacred literature, world view, history, and cultural and social significance of the principal non-Christian religions. Not open to students who have received credit for Religion 93. 3 s.h.
ASSOCIATE PROFESSOR BRADLEY

187. RELIGIOUS VALUES IN CLASSICAL AND EUROPEAN LITERATURE.—A consideration of the religious insights, explicit and implied, in representative writers. 3 s.h. ASSOCIATE PROFESSOR HENRY

201-202. SENIOR SEMINAR IN RELIGION.—Critical research in significant aspects of religion. Prerequisites: Senior standing and permission of the instructor. 6 s.h. ASSOCIATE PROFESSOR MANSCHRECK

228. THE THEOLOGY OF THE GOSPEL AND THE EPISTLES OF JOHN.—A study of the origin of these writings, the provenance of their thought forms and symbolism, their influence on the early Church, and their contemporary significance. Prerequisite: permission of the instructor. 3 s.h. ASSOCIATE PROFESSOR PRICE

235. THE REFORMATION IN THE LIFE AND THOUGHT OF MELANCHTHON.—A study of Reformation thought patterns, trends, and tensions as seen through the work of Philip Melanchthon (1497-1560). Special consideration will be given to other major Reformation figures in relation to Melanchthon. Prerequisite: permission of the instructor. 3 s.h. ASSOCIATE PROFESSOR MANSCHRECK

270. THE RELIGION OF THE HINDUS.—Hinduism studied through its religious literature from the Vedic period to modern times. Attention will center on ways of salvation in philosophical and epic literature, heresies and sects, Muslim influences, and the rôle of religion in modern India. Prerequisite: permission of the instructor. 3 s.h. ASSOCIATE PROFESSOR BRADLEY

DEPARTMENTAL MAJOR

Prerequisite: Completion of the uniform course requirement in religion. (The sequence Religion 1-2 or 51-52 is recommended.)

Major Requirements: Twenty-four semester hours selected as follows:

1. Three hours from 111, 121, 123.
2. Six hours from 124, 131, 133.
3. Three hours from 140, 144, 152.
4. Three hours from 138, 175.
5. Three hours in the Senior year at the 200 level other than 201-202.
6. Six hours elected from the department curriculum.

Related Work: Eighteen semester hours, including a minimum of six hours in each of two departments. There is no restriction in principle as to departments in which related work may be taken. The departmental major adviser will take into consideration the vocational objective of the student and the need to select courses which will strengthen his major work.

The Department offers work leading to graduation with distinction. See the section on Honors.

ROMANCE LANGUAGES

PROFESSOR DAVIS, CHAIRMAN; PROFESSOR DOW, DIRECTOR OF UNDERGRADUATE STUDIES IN FRENCH; ASSOCIATE PROFESSOR FEIN, DIRECTOR OF UNDERGRADUATE STUDIES IN SPANISH; ASSOCIATE PROFESSOR CORDLE, SUPERVISOR OF FRESHMAN STUDIES IN FRENCH; ASSOCIATE PROFESSOR TORRE, SUPERVISOR OF FRESHMAN STUDIES IN SPANISH; PROFESSORS CASTELLANO, JORDAN, PREDMORE, AND WALTON; ASSOCIATE PROFESSOR CHERPACK; ASSISTANT PROFESSORS CASTELLANO, DOW, FLINT, GRANT, MILLER, VINCENT, AND WALKER; DR. BUSH; MESSRS. BARLOW, HARDEE, HOOPER, RIPLEY, SANDBERG, AND STIRES, MRS. BRYAN; MISS KRUMMEL

French 91-92 and Spanish 91-92 are the prerequisites for all elective courses. Some preparation in courses of the 100 level is prerequisite to election of courses above 200, except by special authorization of the department.

Students who, by reason of foreign residence, have had special opportunities in French or Spanish must be classified by the Director of Undergraduate Studies.

FRENCH

1-2. ELEMENTARY FRENCH.—Introduction to simple conversational patterns, elements of grammar, graded readings. 6 s.h. (E & W)
ASSISTANT PROFESSOR GRANT AND STAFF

63-64. INTERMEDIATE FRENCH.—The progressive development of skills in speaking, understanding, and reading. Prerequisite: French 1-2 or two years of high-school French. 6 s.h. (E & W) ASSISTANT PROFESSOR WALKER AND STAFF

91-92. INTRODUCTION TO FRENCH LITERATURE.—Readings from representative French authors. Development of skill in rapid reading correlated with discussion in French of content and ideas. Prerequisite: French 63-64 or equivalent. 6 s.h. (E & W) PROFESSOR WALTON AND STAFF

97. SPOKEN FRENCH.—Intensive instruction in the spoken language: contemporary French prose provides the basis for vocabulary building, and for practice in structural patterns. Does not satisfy the minimum uniform requirement. Limited to 15 students. Prerequisite: French 64. 3 s.h. PROFESSOR DOW

104. THE SIXTEENTH CENTURY.—An introduction to the spirit of the French Renaissance as reflected in the literature of the age of Rabelais and Montaigne, Ronsard and Du Bellay. 3 s.h. (E) ASSISTANT PROFESSOR VINCENT

105. FRENCH COMEDY FROM MEDIEVAL FARCE TO BEAUMARCHAIS.—A study of the comic theater from the beginnings to eighteenth century satire, with special consideration of Molière. The course will trace the development of the French theatrical tradition, with its commentary on human nature and the contemporary scene. 3 s.h. (W) ASSISTANT PROFESSOR WALKER

106. THE WORLDS OF ROUSSEAU.—Studies of Rousseau's conception of the real world (the *Discours*), the ideal world (*Emile* and the *Contrat Social*), the fictional world (*La Nouvelle Héloïse*), and his personal world (the *Confessions* and the *Rêveries*). 3 s.h. (E) ASSOCIATE PROFESSOR CHERPACK

108. THE FRENCH ROMANTIC MOVEMENT.—The impact of the modern world on the French thinkers and great poets of the early nineteenth century. Readings from Rousseau; the eyewitness testimony of Chateaubriand; the lyric poetry of Lamartine, Vigny, Musset, and Hugo. 3 s.h. (W)
ASSISTANT PROFESSOR GRANT

111. FRENCH DRAMA OF THE NINETEENTH CENTURY.—A survey of the French theatre from the Romantic period to the *Théâtre libre*. 3 s.h. (E)
PROFESSOR DOW

112. FRENCH DRAMA OF THE TWENTIETH CENTURY.—Reading of representative plays selected from the works of Bernstein, Maeterlinck, Romains, Sarment, Vildrac, J.-J. Bernard, Claudel, Lenormand, Pagnol, Giraudoux, and Anouilh. 3 s.h. (E) PROFESSOR DOW

127, 128. ADVANCED COMPOSITION AND CONVERSATION.—During the first semester elements of syntax are briefly reviewed, along with constant drill in the conversational idiom. In the second semester, there are exercises in free composition with intensified treatment of pronunciation and diction. 6 s.h. (E)
ASSISTANT PROFESSOR DOW

134. CONTEMPORARY FRENCH LIFE AND THOUGHT.—An introduction to the essential currents in French thought since 1885. Representative literary works are used as a basis for analysis and discussion of the contemporary scene. 3 s.h. (W) ASSOCIATE PROFESSOR CORDLE

213. FRENCH CLASSICISM.—Its initial phase. Readings from Malherbe, Balzac, Voiture, Descartes, Corneille, Molière, and others. 3 s.h. (E)
PROFESSOR WALTON

214. FRENCH CLASSICISM.—Its maturity. Readings from Pascal, Racine, La Fontaine, La Rochefoucauld, Boileau, Bossuet, Madame de Sévigné, La Bruyère, Saint-Simon, and others. 3 s.h. (E) PROFESSOR WALTON

219, 220. OLD FRENCH LANGUAGE AND LITERATURE.—Reading and discussion of representative texts of the Medieval Period accompanied by a study of the evolution of the language. 6 s.h. (E) ASSISTANT PROFESSOR VINCENT

221. THE NINETEENTH CENTURY FRENCH NOVEL.—The initial phrase. The Romantic hero in conflict with society, with special emphasis on the works of Stendhal and Balzac. 3 s.h. (E) ASSISTANT PROFESSOR GRANT

222. THE NINETEENTH CENTURY FRENCH NOVEL.—A continuation of 221. The decline of the individual hero. Flaubert and Zola will receive intensive study. 3 s.h. (E) ASSISTANT PROFESSOR GRANT

227. FRENCH POETRY SINCE THÉOPHILE GAUTIER.—Readings from the principal figures of the Parnassian and Symbolist movements, including Baudelaire, Leconte de Lisle, Heredia, Verlaine, Rimbaud, Mallarmé, Régnier. 3 s.h. (E)
PROFESSOR WALTON

238. ANATOLE FRANCE.—Analysis of the principal phases of his work and its relation to the French tradition. Reading of his poetry, *Le Crime de Sylvestre Bonnard, Thaïs, Le Jardin d'Epicure, Les Dieux ont soif, Le Lys Rouge, L'Ile des Pingouins,* part of *La Vie Littéraire.* 3 s.h. (E) PROFESSOR WALTON

241, 242. FRENCH LITERATURE AND THOUGHT IN THE AGE OF ENLIGHTENMENT.—First semester: The new philosophy and its propagation. Lectures and discussions involving texts by Fontenelle, Montesquieu, Voltaire, Rousseau, Diderot, and others. Second semester: The crisis in literary aesthetics. Readings, lectures, and discussions bearing on the clash between Classicism and new literary orientations. 6 s.h. (E) ASSOCIATE PROFESSOR CHERPACK

245. FRENCH LITERATURE OF THE TWENTIETH CENTURY, 1895-1925.—The metamorphoses of Symbolism (Proust, Gide, Claudel). Extensive readings from the varied works of the three writers. 3 s.h. (E) ASSOCIATE PROFESSOR CORDLE

246. FRENCH LITERATURE OF THE TWENTIETH CENTURY, 1925-1955.—The Existentialist conversion (Malraux, Sartre, Camus). Extensive readings from the varied works of the three writers. 3 s.h. (E) ASSOCIATE PROFESSOR CORDLE

ITALIAN

181-182. ITALIAN.—Intensive introduction to the language. Modern readings. Completion of the second college year of another foreign language will normally be required as a prerequisite. 6 s.h. (E)

SPANISH

1-2. ELEMENTARY SPANISH.—Introduction to simple conversational patterns, elements of grammar, graded readings. 6 s.h. (E & W)
ASSISTANT PROFESSOR MILLER AND STAFF

63-64. INTERMEDIATE SPANISH.—Progressive development of skills in speak-

ing, understanding, and reading. Prerequisite: Spanish 1-2 or two years of high-school Spanish. 6 s.h. (E & W) ASSISTANT PROFESSOR FLINT AND STAFF

91-92. INTRODUCTION TO SPANISH LITERATURE.—Readings from representative Spanish authors. Development of skill in rapid reading correlated with discussion in Spanish of content and ideas. Prerequisite: Spanish 63-64 or equivalent. 6 s.h. (E & W) PROFESSOR CASTELLANO AND STAFF

94. INTRODUCTION TO SPANISH AMERICAN LITERATURE.—Readings from representative Spanish American authors. Development of skill in rapid reading correlated with discussion in Spanish of content and ideas. This course is offered sometimes as an alternate to Spanish 92 and is accepted in fulfillment of major and graduation requirements. 3 s.h. (E & W) PROFESSOR CASTELLANO AND STAFF

97. SPOKEN SPANISH.—Intensive instruction in the spoken language: contemporary Spanish prose provides the basis for vocabulary building, and for practice in structural patterns. Does not satisfy the minimum uniform requirement. Limited to 15 students. Prerequisite: Spanish 64. 3 s.h. PROFESSOR PREDMORE

155. REPRESENTATIVE WRITERS OF SPANISH AMERICAN LITERATURE.—Reading and discussion of major works which illustrate literary trends from the early Colonial period to 1880. 3 s.h. (F) ASSOCIATE PROFESSOR FEIN

156. REPRESENTATIVE WRITERS OF SPANISH AMERICAN LITERATURE.—Study of works which are examples of the principal literary currents after 1880, with particular reference to their relationship to social ideas and problems in the same period. 3 s.h. (E) ASSOCIATE PROFESSOR FEIN

161. SPANISH LITERATURE: OLDER PERIOD.—Reading and interpretation of representative Spanish writers from the beginnings through the Golden Age. 3 s.h. (E) ASSISTANT PROFESSOR MILLER

162. SPANISH LITERATURE: MODERN PERIOD.—Reading and interpretation of representative writers from Romanticism to the present. 3 s.h. (E) ASSOCIATE PROFESSOR TORRE

164. SPANISH CIVILIZATION.—This course is designed to develop an understanding of the Spanish cultural heritage through the study of selected historical, literary, and artistic materials. 3 s.h. (E) ASSISTANT PROFESSOR FLINT

175. PHONETICS AND DICTION.—This course is designed to perfect the student's pronunciation and to improve his diction. Use is made of the tape recordings for practice and for corrective purposes. Prerequisite: Spanish 71, 72, or permission of the instructor. 3 s.h. (E) PROFESSOR CASTELLANO

176. ADVANCED CONVERSATION.—This course is designed to develop facility of expression through constant drill on vocabulary and conversational idiom. Time will be devoted to a review of the essentials of Spanish syntax. Prerequisite: Spanish 175 or permission of the instructor. 3 s.h. (E) PROFESSOR CASTELLANO

255. MODERN LATIN AMERICAN LITERATURE.—The coming of age of Latin American literature in the nineteenth and twentieth centuries, with particular attention to the Modernist movement. 3 s.h. (E) ASSOCIATE PROFESSOR FEIN

256. CONTEMPORARY LATIN AMERICAN LITERATURE.—Trends in Latin American literature after the Modernist movement. Analysis of significant works in various genres. 3 s.h. (E) ASSOCIATE PROFESSOR FEIN

257. OLD SPANISH LANGUAGE.—The historical development of the language together with illustrative readings. 3 s.h. (E) PROFESSOR DAVIS

258. OLD SPANISH LITERATURE.—The literature of the Middle Ages and the early Renaissance. 3 s.h. (E) PROFESSOR DAVIS

260. ADVANCED COMPOSITION AND SYNTAX.—Study of fundamental difficulties in the language; practice in writing idiomatic Spanish; exercises in free composition. For students who have a satisfactory command of Spanish grammar and fair conversational ability. Prerequisites: Spanish 175, 176, or permission. 3 s.h. (E) PROFESSOR CASTELLANO

261. NINETEENTH CENTURY NOVEL.—A study of literary and social trends in the last half of the nineteenth century. Readings will be selected from the novels of Valera, Pereda, Galdós, Pardo Bazán, Blasco Ibáñez, and their contemporaries. 3 s.h. (E) PROFESSOR DAVIS

264. MODERN AND CONTEMPORARY SPANISH THEATRE.—A brief review of the modern and contemporary Spanish theatre from the period of Romanticism. Lectures, reading, and discussion of the most representative works of Benavente, Martínez Sierra, los hermanos Quintero, etc. 3 s.h. (E) PROFESSOR CASTELLANO

265. GOLDEN AGE LITERATURE: CERVANTES.—The life and thought of Cervantes with special emphasis on his *Quijote*. 3 s.h. (E) PROFESSOR PREDMORE

266. GOLDEN AGE LITERATURE: THE DRAMA.—Study of the chief Spanish dramatists of the seventeenth century with readings of representative plays of this period. 3 s.h. (E) PROFESSOR CASTELLANO

275. CONTEMPORARY SPANISH LITERATURE: ESSAY AND LYRIC POETRY.—A study of the revision of national values and literary expression in the twentieth century with particular reference to the crisis of 1898 and to the enrichment of the Spanish tradition through extrapeninsular influences. 3 s.h. (E) PROFESSOR PREDMORE

276. CONTEMPORARY SPANISH LITERATURE: NOVEL.—A study of tradition and innovation in the twentieth century Spanish novel with emphasis on the novels of Unamuno, Baroja, Valle Inclán, and Pérez de Ayala. 3 s.h. (E) PROFESSOR PREDMORE

THE TEACHING OF ROMANCE LANGUAGES

RL218. THE TEACHING OF ROMANCE LANGUAGES.—Evaluation of objectives and methods; a study of the practical problems involved in teaching these languages on the elementary, secondary, and college level; analysis of textbooks, special foreign language programs, audio-visual aids; critical examination of modern techniques in written and oral testing. 3 s.h. (E) PROFESSOR DOW

DEPARTMENTAL MAJOR

Prerequisites:

For French: French 91-92 or equivalent.

For Spanish: Spanish 91-92 or equivalent.

Major Requirements:

For French: A minimum of eighteen semester hours of work must be completed in courses numbered above 100 and must include: (a) six semester hours in courses 127, 128; (b) six semester hours of literature in courses numbered above 200.

For Spanish: A minimum of eighteen semester hours of work must be completed in courses numbered above 100 and must include: (a) six semester hours of (courses 175, 176, 260); (b) six semester hours of literature in courses numbered above 200.

RELATED WORK

Majors in Romance Languages will select, with approval of the Director of Undergraduate Studies, appropriate courses from the following fields: (1) other languages and literatures; (2) history; (3) philosophy; (4) appreciation courses in music and art; and occasionally from other fields deemed suitable.

RUSSIAN

ASSISTANT PROFESSOR JEZIERSKI; MR. KRYNSKI

1-2. INTRODUCTION TO THE RUSSIAN LANGUAGE.—Fundamentals of Russian grammar, graded readings, aural comprehension, introduction to the spoken tongue. 6 s.h. (W) STAFF

63-64. INTERMEDIATE RUSSIAN LANGUAGE.—Rapid review of fundamentals, detailed study of problems in grammar, vocabulary building, development of

rapid reading skills, practice in composition and spoken Russian. Prerequisite: Russian 1-2, or equivalent. 6 s.h. (w) Staff

91-92. ADVANCED RUSSIAN.—Systematic study of syntax and style in the written and spoken language. Readings of nineteenth and twentieth century authors. Oral and written reports. Conducted partly in Russian. Prerequisite: Russian 63-64, or equivalent. 6 s.h. (w)
Assistant Professor Jezierski

101, 102. RUSSIAN LITERATURE AND CULTURE THROUGH THE NINETEENTH CENTURY.—Russian prose, poetry and criticism, with special attention to more recent periods. Readings (from *The Igor Tale* to Blok) in English. Lectures and class discussions. 6 s.h. (w) Assistant Professor Jezierski

103. SOVIET LITERATURE AND CULTURE.—Literature since 1917, as a continuation of nineteenth-century traditions and as a response to Soviet ideology. Readings (in English) from major works of prose, poetry and drama. 3 s.h. (w)
Mr. Krynski

105. THE RUSSIAN THEATER AND DRAMA.—Russian drama from its beginnings to contemporary practice. Lectures, class discussions, readings of plays (Pushkin to Majakovskij) in English. 3 s.h. (w) Assistant Professor Jezierski

112. PUSHKIN AND THE BIRTH OF RUSSIAN REALISM.—An intensive study of the works of Russia's greatest poet. Readings in English or Russian. Prerequisite: Russian 101 or instructor's consent. 3 s.h. (w)

201, 202. THE NOVELISTS OF NINETEENTH CENTURY RUSSIA.—Development of the Russian novel against the European background, with emphasis on Dostoevskij and Tolstoj. Extensive readings in English or Russian. Lectures, oral reports, class discussions and term paper. 6 s.h. (w)
Assistant Professor Jezierski

DEPARTMENTAL MAJOR

Prerequisite: Russian 1-2.

Major Requirements: Russian 63-64 and 18 semester hours in the department including 91-92 and at least 6 semester hours of senior-graduate courses.

Related Work: 18 semester hours chosen with the approval of the department from the humanities, history and the social sciences.

SOCIOLOGY AND ANTHROPOLOGY

Professor McKinney, Chairman; Associate Professor Roy, Director of Undergraduate Studies; Professors LaBarre and Thompson; Associate Professors Back, Kerckhoff, Preiss, and Smith; Assistant Professors Shaw, Simpson, Turk, and Whitridge; Drs. Brown and Vander Zanden

91-92. GENERAL SOCIOLOGY.—An introduction to the scientific study of social life; its origin, evolution and organization as illustrated in the study of a number of concrete social problems. 6 s.h. (e & w) Staff

93. GENERAL ANTHROPOLOGY.—Origins and distribution of mankind; a survey of human palaeontology and human biology, world archaeology, prehistory and languages; and the origins of the family, primitive economics, arts, social and political organization. Special attention is given to primitive peoples. 3 s.h. (w) Professor LaBarre

94. CULTURAL ANTHROPOLOGY.—A study of the dynamics of culture, the causal factors, functions, integration and disintegration, diffusion, growth and change of cultures. Emphasis is upon the simpler societies. 3s.h. (w)
Professor LaBarre

101. GENERAL SOCIOLOGY.—A more intensive version of course 91-92, which enables the student to complete the introductory course in sociology in one semester. 5 s.h. (w) Staff

131. PEOPLES OF THE WORLD: AMERICAN INDIAN.—A comprehensive survey of the Indians of North and South America, including a study of origins and prehistory, archaeology, physical anthropology, languages, material culture, social and political organization, economics and religion, discussed in terms of the "culture area" concept. 3 s.h. (Formerly 103) (w) PROFESSOR LABARRE

135. PEOPLES OF THE WORLD: AFRICA, ASIA, AND OCEANIA.—A comprehensive survey of non-European peoples of the Old World, covering available prehistory, archaeology, racial affiliations, languages, material culture, social and political organization, economics and religion, discussed in terms of the "culture area" concept. 3 s.h. (Formerly 105) (w) PROFESSOR LABARRE

142. THE SOCIOLOGY OF MASS COMMUNICATION.—An analysis of the role of radio, the press, magazines, movies and television in modern societies. An examination of the selective audiences, content characteristics, controlling elements, and organizational structure of the various media of mass communication. 3 s.h. (w) ASSOCIATE PROFESSOR SMITH

145. URBAN SOCIOLOGY.—Using historical, demographic, and ecological materials for background, urban society is studied with respect to its institutions, interactional patterns, differentiation, integration, disorganization, and decentralization. 3 s.h. (Formerly 235) (w) ASSOCIATE PROFESSOR SMITH

146. INDUSTRY AND SOCIETY.—A study of industrial institutions in their interrelationships with other forms of social behavior in the broad cultural setting of western civilization. Attention will center upon analysis of specific social problems resulting from the impact of industrial change. 3 s.h. (Formerly 266) (w) ASSOCIATE PROFESSOR ROY

150. THE FAMILY.—Analysis of the American family as an institutionalized group and its relationship with other institutions and structural features such as social class and ethnic group. Special attention is devoted to methods of research in this area. 3 s.h. (Formerly 250) (w) ASSOCIATE PROFESSOR KERCKHOFF

153. SOCIOLOGY OF THE SOUTH.—The developing regional organization of the world economy studied with especial reference to Southern life. A survey of the composition and distribution of population, races and race relations. Primary emphasis is upon social change. 3 s.h. (Formerly 133) (w) PROFESSOR THOMPSON

154. THE SOCIOLOGY OF THE ARTS.—An analysis of the social relations of the world of the arts (painting and sculpture, music, and literature) with emphasis upon creative artists, art publics, art organizations and art works as they function in their social-cultural milieux. 3 s.h. (E) ASSISTANT PROFESSOR WHITRIDGE

155. INTRODUCTION TO INDUSTRIAL SOCIOLOGY.—An analysis and appraisal of the various factors that affect human relations in industry. The interpersonal and intergroup relationships within the individual industrial unit which determine its efficiency as an economic and social institution and the social conditions in the community as they affect social relations. 3 s.h. (Formerly 165) (w) ASSOCIATE PROFESSOR ROY

159. THE NEGRO IN AMERICA.—A study of the history and changing status of the Negro regarded as a symbol and protagonist of minority groups in America and elsewhere. 3 s.h. (Formerly 137) (w) PROFESSOR THOMPSON

171. PUBLIC OPINION AND PROPAGANDA.—Relations among the concepts of public communication, culture, and social organization are analyzed. The influence of interest groups, elites, mass media, and personal contacts on opinion formation is examined. Methods of opinion-research and analysis of propaganda content are discussed. 3 s.h. (Formerly 246) (w) ASSISTANT PROFESSOR TURK

172. COLLECTIVE BEHAVIOR AND SOCIAL MOVEMENTS.—Examination of disruptive and relatively unorganized aspects of social phenomena such as crowd behavior, fads, rumors, crazes and social movements as indexes of social disequilibrium and potential sources of social change. 3 s.h. (Formerly 243. Social Attitudes and Collective Behavior) (w) ASSOCIATE PROFESSOR KERCKHOFF

191. PRINCIPLES OF SOCIAL CASE INVESTIGATION.—A non-professional course designed to acquaint the student with the basic research techniques employed in the case study of the interrelationships of personality and culture in various fields of sociological and anthropological interest. 3 s.h. (E)
Assistant Professor Whitridge

192. INTRODUCTION TO STATISTICAL PROCESSES.—A non-mathematical, general introduction to the logic of statistical inference employing sociological data. Principles of large sample theory; normal, binomial, and chi square sampling distributions; simple probability; and nonparametric alternatives are considered. 3 s.h. (W) Assistant Professor Shaw

232. PRIMITIVE RELIGION.—The ethnography, the social functions, and the sociopsychological meanings of religion in primitive societies. 3 s.h. (Formerly 212) (W) Professor LaBarre

234. PERSONALITY AND SOCIETY.—The sociology and social psychology of human personality, its origins in the primary group, its nature and varieties and its integrations into secondary group institutions. 3 s.h. (Formerly 213) (W)
Professor LaBarre

236. PERSONALITY AND CULTURE.—The influence of culture patterns and social institutions upon character structure, socialization of the individual, and the dynamics of human personality. Comparative anthropological materials will be drawn upon. Prerequisite: Course 234. 3 s.h. (Formerly 214) (W)
Professor LaBarre

241. SOCIAL STRATIFICATION.—The nature of hierarchical and vertical differentiation in the economic, political and prestige structures in modern societies. The interrelationship of class, status and power strata and their influence on social institutions, personality structure, and group and individual behavior. 3 s.h. (W) Associate Professor Roy

242. THE SOCIOLOGY OF OCCUPATIONS AND PROFESSIONS.—The social significance of work. Analysis of forces changing the contemporary occupational structure, typical career patterns of professions and occupations, the social organization of occupational groups. 3 s.h. (Formerly 158) (W) Professor McKinney

247. COMMUNITY AND SOCIETY.—This course seeks to provide a frame of reference for the analysis and ordering of facts pertaining to the diverse cultures of the world, the State, the world community, the Great Society, news, mass behavior, social problems, races and classes. 3 s.h. (Formerly 237) (W)
Professor Thompson

253. SOCIAL INSTITUTIONS.—The study of particular institutions and the social movements out of which they developed, with emphasis on the development of general propositions concerning the nature, function and importance of institutions in society. 3 s.h. (W) Professor Thompson

255. RACE AND CULTURE.—A comparative study of race relations in world perspective developed around such themes as race and personal identity, the geography and ecology of race relations, the idea of race, and race conflict. 3 s.h. (Formerly 238) (W) Professor Thompson

275. SOCIAL ATTITUDES AND INDIVIDUAL BEHAVIOR.—The importance of symbolic interaction, the development of the "self," the social structuring of the socialization process, individual movement within the social structure, and the importance of membership groups and reference groups. 3 s.h. (W)
Associate Professor Kerckhoff

281. DEVELOPMENT OF SOCIOLOGICAL THEORY.—An analysis of the development, convergence and utilization of sociological theory. Prerequisite, 15 s.h. credit in sociology. 3 s.h. (W) Professor McKinney

282. PRINCIPLES OF SOCIOLOGICAL ANALYSIS.—An advanced course in general sociology designed to give a systematic conception of social order, focusing on its structural components and the functions they serve. Undergraduates must

have at least 15 s.h. and a B average in sociology and have the permission of the instructor. 3 s.h. (w) PROFESSOR THOMPSON

290-291. METHODS OF SOCIOLOGICAL RESEARCH.—Issues involved in establishing and testing scientific propositions; the nature and relationship of concepts, hypotheses, theories and laws; and general principles of research design. Techniques, such as sampling, observation, interviewing, data processing and analysis are learned through study and practice. This is a professional course intended primarily for graduate majors. Undergraduates who have at least 15 s.h. and a B average in sociology may be admitted by permission of the instructor. 6 s.h. (w) ASSOCIATE PROFESSOR SMITH

296, 297. STATISTICAL ANALYSIS IN SOCIOLOGY.—Such techniques as zero and higher order linear and curvilinear correlation, partial correlation, analysis of variance and covariance and factorial design are studied. Where possible, analogous non-parametric techniques are also considered. Prerequisite: 192 or its equivalent, 296 is prerequisite to 297. Undergraduates must have at least 15 s.h., a B average in sociology and obtain the permission of the instructor. 6 s.h. (w) ASSOCIATE PROFESSORS KERCKHOFF AND SMITH

DEPARTMENTAL MAJOR

Prerequisite: Sociology 91-92 or 101.

Major Requirements: Eighteen semester hours of work in the Department in addition to Sociology 91-92 or 101, including at least six semester hours in Senior-Graduate courses.

Related Work: A minimum of eighteen semester hours, at least twelve of which are normally chosen from two of the following fields: economics, education, history, political science and psychology. Additional courses in health education, philosophy and religion may also be elected as related work when indicated by the educational requirements of the student and approved by the departmental adviser. But not more than six hours work in courses primarily open to Freshmen may be counted toward this requirement.

ZOOLOGY

PROFESSOR WILBUR, CHAIRMAN; ASSOCIATE PROFESSOR ROBERTS, DIRECTOR OF UNDERGRADUATE STUDIES; ASSOCIATE PROFESSOR HUNTER, SUPERVISOR OF FRESHMAN INSTRUCTION; PROFESSORS BOOKHOUT, GRAY, GREGG, HORN, AND K. SCHMIDT-NIELSEN; ASSOCIATE PROFESSORS BAILEY, FLUKE, AND LIVINGSTONE; ASSOCIATE RESEARCH PROFESSOR B. SCHMIDT-NIELSEN; ASSISTANT PROFESSORS COSTLOW, KLOPFER, SANDEEN, VERNBERG, AND WARD; INSTRUCTORS FUNDERBURG, LARKIN, KENNY, AND SHARER

1. ANIMAL BIOLOGY.—The principles of biology as applied to animals. 4 s.h. (w & e) ASSISTANT PROFESSORS KLOPFER AND SANDEEN, AND STAFF

2. GENERAL ZOOLOGY.—A brief survey of the animal kingdom. Prerequisite: Zoology 1. 4 s.h. (w & e)
PROFESSOR BOOKHOUT; ASSOCIATE PROFESSOR HUNTER; AND STAFF

53. COMPARATIVE VERTEBRATE ANATOMY.—A study of the anatomy and evolution of the organ systems of vertebrates. Prerequisites: Zoology 1, 2. 4 s.h. (w)
PROFESSOR HORN AND STAFF

71. HEREDITY AND EUGENICS.—Effects of environment and heredity upon the individual and populations; interpretation of human genetic histories. Prerequisite: one year of zoology. 3 s.h. (w) ASSISTANT PROFESSOR WARD

92. GENERAL EMBRYOLOGY.—An introduction to the study of developmental processes. Prerequisite: Zoology 1-2; Chemistry 1, 2. 4 s.h. (w)
PROFESSOR GREGG AND STAFF

109. EVOLUTION.—The facts and theories of organic evolution. Prerequisite: Genetics or consent of the instructor. 3 s.h. (w) ASSISTANT PROFESSOR KLOPFER

110. INTRODUCTION TO GENETICS.—The principles and practical applications of genetics as applied to animals. (Primarily for majors in zoology.) Prerequisite: two years of zoology or consent of instructor. 4 s.h. (w)
ASSISTANT PROFESSOR WARD

120. ORNITHOLOGY.—Lectures, laboratory and field trips dealing with the classification, adaptations, and natural history of birds. Prerequisite: one year of zoology. Zoology 53 recommended. 4 s.h. (w) ASSOCIATE PROFESSOR BAILEY

151. PRINCIPLES OF PHYSIOLOGY.—An introductory survey of physiological functions. Prerequisites: At least a year of zoology and a year of chemistry. 4 s.h. (w) PROFESSOR SCHMIDT-NIELSEN

156. VERTEBRATE HISTOLOGY.—The miscroscopic structure of normal tissues and organs of the vertebrate body. Training will be given in the preparation of material for microscopic study. Prerequisite: Two years of zoology. 4 s.h. (w)
ASSOCIATE PROFESSOR ROBERTS

161. ANIMAL PARASITES.—An introductory course dealing with biological principles involved in parasitism of animals including man. Prerequisite: one year of zoology. 4 s.h. (e) ASSOCIATE PROFESSOR HUNTER

196. SEMINAR: CURRENT DEVELOPMENTS IN ZOOLOGY.—Open to senior departmental majors. 2 s.h. (w) STAFF

FOR SENIORS AND GRADUATES

201. ANIMAL BEHAVIOR.—A reveiw of the major developments in the field with emphasis on recent physiological and developmental studies. Prerequisites: Physiology, Genetics and Evolution, or permission of instructor. 3 s.h.
ASSISTANT PROFESSOR KLOPFER

203. ECOLOGY.—Relation of animals to environment. Lectures, readings, reports, conferences; laboratory and field work. Prerequisites: at least two years of zoology. 4 s.h. PROFESSOR GRAY

204. ADVANCED PARASITOLOGY.—Lectures, readings, and laboratory work, dealing with practical and theoretical problems of classification, morphology and host relations of animal parasites. Offered in alternate years. Prerequisite: Zoology 161 or equivalent; or permission of instructor. 4 s.h. (e)
ASSOCIATE PROFESSOR HUNTER

210. EXPERIMENTAL GENETICS.—The relationship of phenotype to genome and environment; cytogenetics, recent research in the field of genetics. Laboratory. Prerequisites: Principles of heredity (one of the following: Zoology 110, Botany 101, 202, or equivalent), or consent of instructor. 4 s.h. ASSISTANT PROFESSOR WARD

216. LIMNOLOGY.—A study of lakes, ponds and streams, including their origin, development, geochemistry, energy balance, productivity and the dynamics of plant and animal communities living in them. Lectures, field trips and laboratory work. Usually offered in alternate years. Prerequisites: Chemistry 1, 2; Physics 1, 2; Mathematics 51; and one year of biology; or permission of instructor. 4 s.h. (w)
ASSOCIATE PROFESSOR LIVINGSTONE

219, 220. SPECIAL PROBLEMS.—Senior majors who have had proper training may be permitted to carry on special work. Permission must be obtained from the Director of Undergraduate Studies and the instructor under whom the student wishes to work. Not more than 4 s.h. may be counted toward major work. (w & e)
STAFF

222. ENTOMOLOGY.—A study of anatomy, physiology, embryology, and classification of insects. Prerequisite: One year of zoology. 4 s.h. (w) PROFESSOR GRAY

224. VERTEBRATE ZOOLOGY.—A study of life histories, adaptations, ecology and classification of vertebrate animals. Offered in alternate years. Prerequisite: Zoology 53. 4 s.h. (w) ASSOCIATE PROFESSOR BAILEY

228. EXPERIMENTAL EMBRYOLOGY.—Lectures, readings, reports, and laboratory work. Prerequisites: Zoology 53, 92, 271, or equivalent. 4 s.h.
PROFESSOR GREGG

238. SYSTEMATIC ZOOLOGY.—The fundamental theory and practice involved in the collection, identification, and classification of animals. Offered in alternate years. Prerequisites: Zoology 1, 2 and permission of instructor. 4 s.h. (w)
ASSOCIATE PROFESSOR BAILEY

243. CYTOLOGY.—The structure of the cell. Lectures, readings, reports, and laboratory work. Prerequisites: 2 years of biology, 1 year of chemistry, and permission of instructor. 4 s.h. ASSOCIATE PROFESSOR ROBERTS

245. RADIATION BIOLOGY.—An introductory course which deals with the basic physical, chemical, and biological principles upon which the study of the biological effects of radiation is based. Laboratory work and lectures. Usually offered in alternate years. Prerequisites: Mathematics through trigonometry, college physics, inorganic and organic chemistry. 4 s.h. (w)
ASSOCIATE PROFESSOR FLUKE

249. PHYSIOLOGY OF INVERTEBRATE EFFECTORS, RECEPTORS AND COORDINATION.—A study of sense organs, endocrine and nervous mechanisms, muscles, chromatophores and other effectors in selected invertebrate animals. Lectures, reports and laboratory. Prerequisite: 2 years of zoology, 1 year of chemistry, 1 year of physics (may be taken concurrently). 4 s.h.
ASSISTANT PROFESSOR SANDEEN

252. COMPARATIVE PHYSIOLOGY.—The physiological mechanisms of animals studied on a comparative basis. Prerequisite: Zoology 151 or equivalent. 4 s.h. (w)
PROFESSOR K. SCHMIDT-NIELSEN

253. ADVANCED VERTEBRATE MORPHOLOGY.—Descriptive and experimental studies in comparative vertebrate morphogenesis. Lectures, readings, reports and laboratory. Usually offered in alternate years. Prerequisites: Zoology 53, 92. 4 s.h. (w) PROFESSOR HORN

271. CELLULAR PHYSIOLOGY.—The physiological processes of living matter approached through studies of cells and tissues. Prerequisites: 3 semesters of biology and Chemistry 151, or consent of the instructor. 4 s.h. (w)
PROFESSOR WILBUR; ASSOCIATE RESEARCH PROFESSOR B. SCHMIDT-NIELSEN

274. INVERTEBRATE ZOOLOGY.—A study of structure, functions, and habits of invertebrate animals under normal and experimental conditions. Field trips will be made to study, collect, and classify animals in their natural habitats. Offered in alternate years. Prerequisites: Zoology 1, 2. 4 s.h. (w) PROFESSOR BOOKHOUT

276. PROTOZOOLOGY.—The morphology, physiology, taxonomy, and culture of protozoa. Offered in alternate years. Prerequisites: Zoology 1, 2. 4 s.h. (w)
PROFESSOR BOOKHOUT

278. INVERTEBRATE EMBRYOLOGY.—Lectures, readings and laboratory work dealing with rearing, life history and development of invertebrates. Offered in alternate years. Prerequisite: Two years of Zoology. 4 s.h. (w)
PROFESSOR BOOKHOUT

MARINE LABORATORY. The following courses are given at Duke University Marine Laboratory, Beaufort, N. C.: S203, Marine Ecology; S204, Marine Parasitology; S214, Oceanography; S250, Physiological Ecology of Marine Animals, S274, Marine Invertebrate Zoology. Consult the announcement of the Duke University Marine Laboratory.

DEPARTMENTAL MAJOR

Prerequisites: Zoology 1 and 2.

Major Requirements (for both A.B. and B.S. degrees): A minimum of 24 s.h. of zoology including at least one course in two of the following three areas: morphology (53, 92, 156, or 278), physiology (151 or 271), and genetics (71 or 110).

Related Work:

A.B. Degree: Related work will include at least one year of chemistry with

additional work usually chosen from courses in botany, chemistry, geology, mathematics, or physics. The language requirement will be met by French, German, or Russian.

B.S. Degree: Related work will include chemistry 151 and 152 with additional work chosen from courses in botany, geology, mathematics, or physics. Language requirements may be met by two languages, chosen from German, French, and Russian.

The Department offers work leading to graduation with distinction. See the section on Honors.

College of Engineering

CIVIL ENGINEERING

PROFESSOR ROWE, CHAIRMAN; PROFESSOR WILLIAMS; ASSOCIATE PROFESSORS GARDNER AND PALMER; ASSISTANT PROFESSORS ARGES, HAINES, HARRAWOOD AND THARP; DRS. KUMAR AND OKUN; MESSRS. FU, HOLLAND, MIRZA, MOLINA, SERINKEN, AND UNAL

CE 61. PLANE SURVEYING.—Use and adjustment of instruments; transit-tape, stadia, and plane table surveying; differential and profile leveling; calculation of bearings, latitudes, departures, and areas; accuracy and errors; topographic mapping; rural and urban land surveys; celestial observations for azimuth; triangulation; introduction to photogrammetry. Prerequisites: Engrg. 1 and Math 21. 5 s.h. (w) ASSISTANT PROFESSOR THARP

CE 72. MATERIALS LABORATORY I.—Blending of granular materials and determination of their physical properties, design of concrete and bituminous mixtures, consistency limits of soils. 1 s.h. (w) MR. HOLLAND

CE 101. MATERIALS LABORATORY II.—Testing of soils, concrete, and bituminous mixtures. Mechanical analyses, compaction, consolidation, triaxial, and stability tests, analysis of test results. Prerequisite: CE 72; concurrent: Engrg. 107. 1 s.h. (w) ASSOCIATE PROFESSOR GARDNER

CE S110. PLANE SURVEYING.—Use and adjustment of instruments; transit-tape, stadia, and plane table surveying; differential and profile leveling; calculation of bearings, latitudes, departures, and areas; accuracy and errors; mapping; celestial observations for azimuth; triangulation. Prerequisite: trigonometry; engineering graphics desirable. 4 s.h. (w) ASSISTANT PROFESSOR THARP

CE 113. ROUTE SURVEYING.—Simple, compound, and reverse curves; parabolic curves; spirals; earthwork and grading plans; route location and selected problems in design. Prerequisite: CE 61. 3 s.h. (w) PROFESSOR WILLIAMS

CE 116. HIGHWAY ENGINEERING.—Location, design, construction and maintenance of highways and city streets; soil stabilization; traffic studies; economics of planning and design. Prerequisite: CE 113, 135. 3 s.h. (w) PROFESSOR WILLIAMS

CE 118. MATERIALS OF ENGINEERING.—Behavior of materials under load: mechanical properties as criteria for failure; elementary metallurgy. Ferrous and non-ferrous metals, timber, plastics, stone and clay products. Prerequisite: Engrg. 107 and 109. 2 s.h. (w) ASSISTANT PROFESSOR ARGES

CE 121. *HYDROLOGY.—Fundamentals of meteorology; precipitation; evaporation. Ground water development. Stream flow and stream gaging. Hydrograph

* Offered only upon sufficient demand; enrollment limited.

analysis. Flood routing. Field trips to be arranged. Prerequisite: Engrg. 128. 3 s.h. (w) PROFESSOR WILLIAMS

CE 123. HYDRAULIC ENGINEERING.—Pipe flow, compound pipe systems, network analysis, and problems on pumps and turbines, fundamental aspects of hydrology. Open channel flow, non-uniform flow computations. Irrigation and drainage problems. Flood control and hydraulic structures. Prerequisite: Engrg. 128. 3 s.h. (w) PROFESSOR WILLIAMS

CE 124. SANITARY ENGINEERING.—Public health and engineering aspects of water supply and waste disposal. Population estimation, storage requirements, supply and collection systems. Water and waste treatment, laboratory analyses and interpretation of results. Prerequisite: CE 123, Chemistry 2. 3 s.h. (w) DR. OKUN

CE 131. STRUCTURAL MECHANICS I.—Stresses in trusses by algebraic and graphic methods under all conditions of loading. Structural drafting. Prerequisite: Engrg. 107. 3 s.h. (w) ASSOCIATE PROFESSOR GARDNER

CE 132. STRUCTURAL DESIGN I.—Tension, compression, flexural members, eccentric connections, unsymmetrical bending, riveted and welded plate girders, trusses and office building frames. Timber design using ring connectors. Design and detail drawings. Prerequisite: CE 131. 4 s.h. (w) ASSOCIATE PROFESSOR PALMER

CE 133. STRUCTURAL DESIGN II.—Theory and design of reinforced concrete beams, columns, and footings. Analysis and design of arches and bents. Prerequisite: CE 140. 4 s.h. (w) PROFESSOR ROWE

CE 135. SOIL MECHANICS.—Soil identification and classification; elementary soil physics; drainage; exploration; stability of footings and retaining walls; settlement; application of theory to foundation design. Prerequisite: Engrg. 107. 2 s.h. (w) ASSOCIATE PROFESSOR GARDNER

CE 137, 138. SEMINAR.—Students are required to make reports and to talk on current engineering literature or on such other topics as may be assigned. 1-2 s.h. (w) STAFF

CE 140. STRUCTURAL MECHANICS II.—Application of least work, slope deflection, and moment distribution to statically indeterminate structures. Deflection of trusses. Prerequisite: CE 131. 3 s.h. (w) ASSOCIATE PROFESSOR PALMER

CE 143, 144. PROJECTS IN CIVIL ENGINEERING.—This course may be assigned by the Chairman of the Department to certain seniors who have shown an aptitude for research in one distinct field of civil engineering, in which case it may be substituted for certain general civil engineering courses. 2-6 s.h. (w) STAFF

CE 146. PROFESSIONAL ENGINEERING PROBLEMS.—Professional aspects of civil engineering practice. Selected problems in analysis and design, consideration of engineering economy, contracts, specifications, and ethics. Seniors only. 2-3 s.h. (w) ASSOCIATE PROFESSOR PALMER

CE 154. *GEOMETRIC THOROUGHFARE DESIGN.—Analysis and design of municipal street systems. Origin-destination surveys; control of traffic flow; grade, rotary, and grade-separation intersections. Prerequisite: CE 113. 3 s.h. (w) ASSISTANT PROFESSOR THARP

CE 201. *THEORETICAL AND APPLIED MECHANICS.—Introduction to the theory of elasticity, vibrations analysis, and hydrodynamics. (Same course as ME 201.) Prerequitite: permission of instructor. 3 units. (w) PROFESSOR ROWE

CE 202. *ADVANCED MECHANICS OF MATERIALS AND EXPERIMENTAL STRESS ANALYSIS.—The analysis of stress and strain in deformable bodies, correlation of theory with data from experiment. Photoelasticity. Strain gages. Similitude. Prerequisite: permission of instructor. 3 units (w) PROFESSOR ROWE

The Department offers work leading to graduation with distinction. See the section on Honors.

* Offered only upon sufficient demand; enrollment limited.

ELECTRICAL ENGINEERING

PROFESSOR VAIL, CHAIRMAN; PROFESSORS SEELEY AND MEIER; ASSOCIATE PROFESSORS ARTLEY, KRAYBILL, OWEN, AND WILSON; ASSISTANT PROFESSOR GEORGE; MESSRS. DORRIS, JONES, MCKEEL, OLIVE, PARKER, PILKINGTON, RATHMELL, STEWART, WOOTEN, AND YOUNG

EE 53. ELECTRICAL ENGINEERING FUNDAMENTALS.—Survey of electrical engineering profession: role of engineering and professional engineering societies in national life; engineering economy; engineering law; technical engineering problems; basic philosophy of engineering education; introduction to staff, curriculum, and facilities of Department of Electrical Engineering. One two-hour session. 1 s.h. (w) ASSOCIATE PROFESSOR KRAYBILL AND MR. OLIVE

EE 55. ELECTRIC CIRCUITS.—Principles of alternating and direct-current electric circuits: physical nature of circuit elements and sources of excitation; volt-ampere relations for elements and sources singly and in simple combination; instantaneous and effective values; algebra of phasors and complex quantities; locus diagrams; Fourier wave analysis; single-phase and polyphase circuits. Prerequisite: Physics 42. Concurrent: Mathematics 63. Three class sessions and one two-hour computation. 4 s.h. (w)
ASSOCIATE PROFESSOR WILSON AND MESSRS. DORRIS AND PILKINGTON

EE 56. ELECTRIC NETWORKS.—Network topology; loop and nodal analysis; duality; transients; Laplace transformation; time and frequency domains; network functions; pole-zero plots; feedback systems. Prerequisite: EE 55. Concurrent: Mathematics 64. Three class sessions and one two-hour computation. 4 s.h. (w)
PROFESSOR VAIL AND MESSRS. DORRIS AND PILKINGTON

EE 109-110. ELECTROMAGNETIC SYSTEMS.—Mathematical and physical consideration of energy relations and forces associated with both discrete particles and materials in electromagnetic fields: vector notation; Maxwell's equations; static and quasi-static fields; energy, power flow, and impedance; particle ballistics; electron emission; control of conduction in vacuums, gases, liquids, and solids; resistance, capacitance, and inductance of systems of conductors; forces between relatively moving bodies; dielectric and magnetic materials. Prerequisite: EE 56. Concurrent: Mathematics 111. Three class sessions and one two-hour computation. 8 s.h. (w) ASSOCIATE PROFESSOR ARTLEY; MESSRS. JONES AND STEWART

EE 111-112. ELECTRICAL PRINCIPALS LABORATORY.—Instruction in electrical laboratory techniques; experimental study of basic principles of electromagnetics, electronics, and electric and magnetic circuits. Prerequisite: EE 56. Concurrent: EE 109-110. Two three-hour laboratory periods throughout first semester; one throughout second semester. 3 s.h. (w)
MESSRS. PARKER, PILKINGTON, RATHMELL, AND WOOTEN

EE 123. FUNDAMENTALS OF ELECTRICAL ENGINEERING.—Introductory treatment of electrical engineering fundamentals for students majoring in other branches of engineering: principles of electric circuits, fields, and electronics. Prerequisites: Mathematics 63 and Physics 42. Concurrent: EE 125. Three class sessions. 3 s.h. (w) ASSOCIATE PROFESSOR KRAYBILL AND MR. MCKEEL

EE 124. INDUSTRIAL ELECTRICAL ENGINEERING.—Introductory treatment of industrial applications of electrical engineering fundamentals for students majoring in other branches of engineering: alternating- and direct-current machinery; electronic and electromagnetic control systems; illumination principles. Prerequisite: EE 123. Concurrent: EE 126. Three class sessions. 3 s.h. (w)
ASSOCIATE PROFESSOR KRAYBILL AND MR MCKEEL

EE 125. ELECTRICAL FUNDAMENTALS LABORATORY.—Laboratory course paralleling course EE 123, with which it should be taken concurrently. One three-hour laboratory. 1 s.h. (w) STAFF

EE 126. INDUSTRIAL ELECTRICAL LABORATORY.—Laboratory course paralleling course EE 124, with which it should be taken concurrently. One three-hour laboratory. 1 s.h. (w) STAFF

EE 127. *ELECTRONICS FOR ENGINEERS.—Introductory treatment of principles and applications of engineering electronics for students majoring in other branches of engineering: amplifiers; feedback; basic communications and control circuits; electronic computers. Prerequisite: EE 123 and permission of instructor. Three class sessions. 3 s.h. (w) MR. YOUNG

EE 159. *TRANSMISSION.—Development of theory underlying transmission of electric energy over conductors at both power and communication frequencies. Two class sessions and one two-hour computation. Prerequisite: EE 110; Mathematics 111. Elective for electrical majors. 3 s.h. (w) PROFESSOR SEELEY

EE 161. *HIGH-VOLTAGE PHENOMENA.—Introductory study of high-voltage phenomena and their engineering application; behavior of gaps and insulators upon application of power-frequency and impulse voltages; corona; properties of insulating materials; high-voltage measurements; elements of high-voltage design. Two class sessions and one three-hour laboratory. Prerequisite: EE 110 and permission of instructor. Elective for electrical majors. 3 s.h. (w) PROFESSOR VAIL

EE 165-166. ELECTRICAL ENGINEERING SEMINAR.—A course in which seniors are required to present oral reports and dissertations on material appearing in current engineering literature. Juniors may participate, but without credit. One class session. 2 s.h. (w) STAFF

EE 171. *FUNDAMENTALS OF ILLUMINATION.—Factors that influence seeing; lighting language, sources, and measuring techniques; basic factors involved in recommended lighting practice. Two class sessions and one two-hour computation. Prerequisite: EE 56 or EE 123, and permission of instructor. Elective. 3 s.h. (w) ASSOCIATE PROFESSOR KRAYBILL

EE 173-174. *PROJECTS IN ELECTRICAL ENGINEERING.—A course which may be undertaken only by seniors who show special aptitude, or who may have had previous experience directly related to the proposed project. The consent of the Chairman of the Department must be obtained before registering. Elective for electrical majors. 3-6 s.h. (w) STAFF

EE 177. *ENERGY TRANSMISSION AND RADIATION.—A more advanced treatment of electromagnetic theory than is afforded by EE 109-110, with particular application to wave guides and antennas. Prerequisite: EE 110 and permission of instructor. Three class sessions. 3 s.h. (w) ASSOCIATE PROFESSOR ARTLEY

EE 179. *ADVANCED ELECTRICAL MEASUREMENTS.—Theory and practice of measurements of electrical quantities at extremes of voltage, current, power, and frequency. Two class sessions and one three-hour laboratory. Prerequisite: EE 110 and permission of instructor. 3 s.h. (w) ASSOCIATE PROFESSOR OWEN

EE 181-182. ELECTRONIC NETWORKS.—Advanced topics in engineering electronics: piece-wise linear approximation for nonlinear operation and incremental models for linear operation of basic electronic circuits; narrow- and wide-band amplifiers; feedback amplifiers; oscillators; modulation and demodulation; microwave devices; communication systems. Prerequisite: EE 110. Concurrent: EE 183-184. Three class sessions. 6 s.h. (w)
ASSOCIATE PROFESSOR OWEN AND ASSISTANT PROFESSOR GEORGE

EE 183-184. ELECTRONICS LABORATORY.—Laboratory course paralleling and integrated with course EE 181-182, with which it should be taken concurrently. One three-hour laboratory. 2 s.h. (w)
MESSRS. DORRIS, JONES, RATHMELL, AND YOUNG

EE 189. *ELECTROMAGNETIC DEVICES.—General concepts and techniques useful in solving problems arising in the design of electromagnetic devices, particularly those employing ferromagnetic materials; relays; saturable reactors; rotating amplifiers; motors and generators. Prerequisite: permission of instructor. 3 s.h. (w) ASSOCIATE PROFESSOR ARTLEY

EE 191-192. ELECTRIC MACHINERY.—Application of circuit and field principles to underlying theory of static and rotating electric machinery: mathematical

techniques for analyzing transformers and electromechanical energy converters as individual devices and when interconnected into systems. Prerequisite: EE 110. Concurrent: EE 193-194. Three class sessions. 6 s.h. (w)
PROFESSOR MEIER AND ASSOCIATE PROFESSOR WILSON

EE 193-194. ELECTRIC MACHINERY LABORATORY.—Laboratory course paralleling and integrated with course EE 191-192, with which it should be taken concurrently. One three-hour laboratory. 2 s.h. (w)
PROFESSOR MEIER, ASSOCIATE PROFESSOR WILSON, AND MR. PARKER

EE 199. *FEEDBACK CONTROL SYSTEMS.—Theory, analysis, design, and operation of servomechanisms, regulators, program controllers, and other feedback controls; electrical, mechanical, hydraulic, aerodynamic, pneumatic, and thermal systems; steady-state and transient solutions; stability criteria and diagrams; linear and nonlinear systems. Two class sessions and one three-hour laboratory. Prerequisite: EE 110 and permission of instructor. Concurrent: EE 191 or EE 192. Elective for electrical majors. 3 s.h. (w) MR. YOUNG

EE 201. *ENERGY SYSTEMS.—General concepts of energy storage, transfer, transformation, and control that are applicable to a wide variety of technical systems, with emphasis on their common mathematical structure: electrical, magnetic, mechanical, hydraulic, aerodynamic, and thermal systems; applications to specific engineering devices and machines. Prerequisite: permission of instructor. 3 units. (w) ASSOCIATE PROFESSOR ARTLEY

EE 202. *INFORMATION SYSTEMS.—General concepts of information storage, transfer, and processing; optimum total response of information handling systems, including considerations of stability and dynamic response in the time and frequency domains; applications to communications networks and devices, including an introduction to computers. Prerequisite: permission of instructor. 3 units. (w)
ASSOCIATE PROFESSOR OWEN

EE 211. *SOLID STATE ENGINEERING.—Introductory concepts and engineering applications of solid state physics: crystalline structure and thermal properties of solids; insulators, semiconductors, and conductors; magnetic materials. Prerequisite: permission of instructor. 3 units. (w) PROFESSOR VAIL

EE 222. *NONLINEAR ELECTROMAGNETICS.—Analytic approximations for nonlinear characteristics; use of idealized components in the analysis of piecewise-linear systems; approaches applicable when a material such as high-permeability steel possesses characteristics which are different under static and dynamic conditions; applications to devices such as transductors, self-saturating magnetic amplifiers, modulators, ferroresonant circuits, relaxation oscillators and parametric amplifiers. Prerequisite: permission of instructor. 3 units.
ASSOCIATE PROFESSOR WILSON

EE 231. *NUCLEAR ENGINEERING.—Review of nuclear physics; fission and the chain reaction; nuclear reactor principles; materials, instrumentation, and control of nuclear reactors; selected applications and techniques of nuclear engineering. Prerequisite: permission of instructor. 3 units. (w) PROFESSOR MEIER

E 259. *ADVANCED ELECTRICAL ENERGY CONVERSION.—Advanced theory of rotating electric machines; direct and quadrature axis components; equivalent circuits; symmetrical components; transients in machine systems. Prerequisite: an advanced course in electric machinery and permission of instructor. 3 units. (w)
PROFESSOR MEIER AND ASSOCIATE PROFESSOR WILSON

EE 265. *ADVANCED TOPICS IN COMMUNICATIONS.—Special problems dealing in the design and application of devices and systems in communications engineering. Prerequisite: an advanced course in electronic networks. 3 units. (w)
ASSOCIATE PROFESSOR OWEN

The Department offers work leading to graduation with distinction. See the section on Honors.

* Offered only upon sufficient demand; enrollment limited.

MECHANICAL ENGINEERING

PROFESSOR MACDUFF, CHAIRMAN; PROFESSOR KENYON; ASSOCIATE PROFESSORS BOYLE, ELSEVIER, AND STEPHENSON; ASSISTANT PROFESSOR LEWIS; MESSRS. ARNAS, BUZZARD, CALLESON, CEBECI, ERASLAN, GLENN, AND NASH

ME 52. KINEMATICS, KINETICS.—Analytical and numerical studies of displacement, velocity, and acceleration in mechanical elements and systems. Synthesis and analysis of mechanisms for automatic machines, application of work, energy, impulse and momentum. Prerequisite: Engrg 2, Phys 41. Concurrent: Math 63. 4 s.h. (w) PROFESSOR MACDUFF; ASSOCIATE PROFESSOR STEPHENSON, AND MR. NASH

ME 59. MATERIALS AND PROCESSES.—Elementary metallurgy and introduction to modern theories of the solid state; selection and properties of engineering materials and effect of forming processes upon properties. Prerequisite: Sophomore standing. 3 s.h. (w) ASSOCIATE PROFESSOR STEPHENSON AND MR. CALLESON

ME 101-102. ENGINEERING THERMODYNAMICS.—A basic study of the laws of thermodynamics and their use in engineering analysis and design. Properties of pure substances; vapor cycles; fluid flow; thermodynamic machinery; introduction to combustion processes. Prerequisite: Chem 1, Phys 41. Concurrent: Math 64. 6 s.h. (w) PROFESSOR KENYON; ASSOCIATE PROFESSORS BOYLE AND ELSEVIER

ME 103. THERMODYNAMICS.—A terminal course in thermodynamics and its engineering applications for civil and electrical engineering students. The basic laws of thermodynamics; gases; vapors; elements of combustion and heat transfer. Prerequisite: Chem 1, Phys 41. Concurrent: Math 64. 3 s.h. (w) ASSOCIATE PROFESSOR ELSEVIER, MESSRS. ARNAS AND CALLESON

ME 105. DYNAMICS OF LIQUIDS.—A study of liquids at rest and in motion. Principles of laminar and turbulent flow through pipes, orifices, nozzles, and metering devices; impulse and momentum concepts; vortex action, pumps, turbines and fluid couplings; resistance of immersed and floating bodies. Prerequisite: Phys 41 Math 63. 3 s.h. (w) PROFESSOR KENYON AND MR. BUZZARD

ME 106. HEAT TRANSFER.—A basic course covering the elements of radiation, conduction, and convection. Methods of temperature measurement, steady and transient heat flow, analytical and numerical methods. Concurrent: ME 102, 105; Math 111. 3 s.h. (w) ASSOCIATE PROFESSOR STEPHENSON AND MR. BUZZARD

ME 113-114. JUNIOR MECHANICAL ENGINEERING LABORATORY.—Measurement of mechanical and thermodynamic properties of systems. Student planning and reporting of laboratory experiments in temperature, pressure, velocity, acceleration, flow, energy and power measurements. Concurrent: ME 101-102, ME 105-106. 2 s.h. (w) STAFF

ME 116. MECHANICAL ENGINEERING LABORATORY.—Primarily for civil and electrical engineering students. Selected laboratory experiments in measuring mechanical and thermodynamic properties of systems. Student planning of experiments in temperature, pressure, velocity, acceleration, flow, energy and power measurements. Concurrent: ME 103. 1 s.h. (w) STAFF

ME 128. *DYNAMICS OF GASES.—The flow of compressible fluids at high velocities. One-dimensional compressible flow; area change; normal shock; friction and heat transfer; Mach number. Concurrent: ME 102, ME 106. 3 s.h. (w) MR. BUZZARD

ME 141. MACHINE DESIGN.—Methods of design of typical machine elements; strength and deflection requirements; simple shafts, springs, power transmitting devices, materials, and cost analysis. Prerequisites: Engrg. 107, ME 59. Concurrent: ME 52. 3 s.h. (w) ASSISTANT PROFESSOR LEWIS, MESSRS. CALLESON AND NASH

ME 142. MACHINE DESIGN.—A continuation of ME 141. Analysis of gears and gear trains; lubrication; brakes and clutches; introduction to advanced topics. Prerequisite: ME 141. 3 s.h. (w)
ASSISTANT PROFESSOR LEWIS, MESSRS. CALLESON AND NASH

ME 153. *HEATING, AIR CONDITIONING AND REFRIGERATION.—Principles of thermodynamics, heat transfer and fluid flow applied to comfort and industrial air conditioning. Cycles and equipment for heating, cooling, and humidity control. Air transmission and distribution. Modern vapor compression, absorption and low temperature refrigeration cycles and systems. Prerequisite: ME 102 and 106. 3 s.h. (w) ASSOCIATE PROFESSORS ELSEVIER AND STEPHENSON

ME 156. COMBUSTION ENGINES.—A study of cycles, fuels, and fuel mixtures in piston, ram jet, and rocket engines. Comparison of real and theoretical cycles; carburetion and fuel injection systems; modern developments. Prerequisite: ME 102. 3 s.h. (w) ASSOCIATE PROFESSOR ELSEVIER

ME 157. *PUMPS, COMPRESSORS AND TURBINES.—An introduction to the theory and design of centrifugal pumps and compressors, axial-flow compressors, impulse and reaction turbines, and gas turbine plants, combustion systems and regenerators. Concurrent: ME 102 and 106. 3 s.h. (w) ASSOCIATE PROFESSOR BOYLE

ME 159-160. SENIOR MECHANICAL ENGINEERING LABORATORY.—Laboratory determination of heat flow and operating characteristics of engines, fans, pumps, and other power and refrigeration plant components; vibrational systems, control systems, analog methods. Student planning and reporting of original experiments. 2 s.h. (w) STAFF

ME 162. POWER PLANTS.—Basic concepts of thermodynamics, heat transfer and fluid flow are combined with industrial data for the consideration of real power plant problems. Selection of steam generators, prime movers, fans, pumps, heaters, and piping systems with regard to engineering and economic points of view. Prerequisite: ME 102. 3 s.h. (w) PROFESSOR KENYON AND ASSOCIATE PROFESSOR BOYLE

ME 163. *VIBRATION CONTROL.—An introduction to the dynamics of mechanical systems; equilibrium, stability, lumped and distributed systems, cradle and field balancing. System analysis by classical differential equations, mechanical impedance, operational calculus and analog simulation. Prerequisite: Math 64. ME 141. 3 s.h. (w) PROFESSOR MACDUFF

ME 164. *ENGINEERING ANALYSIS.—A study of a series of engineering problems with particular reference to mathematical and graphical methods of solution and engineering interpretation of results. Concurrent: Math 64. 3 s.h. (w)
ASSOCIATE PROFESSOR BOYLE

ME 166. *AIR CONDITIONING DESIGN.—Typical air conditioning systems considered in relation to specific problems. Equipment analysis and performance, economic considerations, system control and response, noise generation and attenuation. Prerequisite: ME 153. 3 s.h. (w) ASSOCIATE PROFESSORS BOYLE AND ELSEVIER

ME 167. INDUSTRIAL ENGINEERING.—A study of the organization and functioning of industries; function of engineering in industry; job analysis and self evaluation; professional and executive responsibility of the mechanical engineer. Prerequisite: Senior standing. 3 s.h. (w)
PROFESSOR KENYON AND ASSISTANT PROFESSOR LEWIS

ME 171. RESPONSE OF PHYSICAL SYSTEMS.—An introduction to the basic fundamentals of instrumentation and of the control of processes and systems with emphasis on correlation of analysis and experimental results. Prerequisite: Math 111. 3 s.h. (w) PROFESSOR MACDUFF, ASSOCIATE PROFESSOR BOYLE AND MR. BUZZARD

ME 173-174. MECHANICAL ENGINEERING SEMINAR.—A course designed to keep the students abreast of progress in the engineering field and to develop their ability to express ideas effectively in speech and writing. Open to seniors only. 2 s.h. (w) STAFF

* Offered only upon sufficient demand; enrollment limited.

ME 197-198. PROJECTS IN MECHANICAL ENGINEERING.—This course may be assigned by the Chairman of the Department to outstanding seniors who express a desire for such work and who have shown aptitude for research in one distinct field of mechanical engineering. Prerequisite: 3.0 average and senior standing. 1-6 s.h. (w) STAFF

The Department offers work leading to graduation with distinction. See the section on Honors.

ENGINEERING SUBJECTS COMMON TO ALL CURRICULA

ENGRG 1. ENGINEERING GRAPHICS.—The study of mechanical drawing with emphasis on third angle projection, pictorial drawing, dimensioning, working drawings, pencil and ink techniques. 2 s.h. (w)
ASSISTANT PROFESSORS HAINES AND LEWIS AND STAFF

ENGRG 2. DESCRIPTIVE GEOMETRY.—A study of drawing board geometry with emphasis on line and plane problems, developments, and intersections. Further emphasis on drawing techniques. Prerequisite: Engrg 1. 2 s.h. (w)
ASSISTANT PROFESSORS HAINES AND LEWIS AND STAFF

ENGRG 57. STATICS.—A study of force systems, equilibrium by algebraic and graphic methods, centroids, friction, moment of inertia. Prerequisite: Engrg 1. Concurrent: Math 63. 3 s.h. (w) ASSISTANT PROFESSORS HARRAWOOD AND THARP

ENGRG 60. STATICS AND STRENGTH OF MATERIALS.—Force systems, friction, centroids, and moments of inertia. Stresses and deformations in elastic bodies. Concurrent: Math 64. For electrical engineers and nonengineering students. Three class sessions and one three-hour computation period. 4 s.h. (w)
STAFF

ENGRG 107. MECHANICS OF MATERIALS.—Stresses and strains in elastic bodies; shear and moment diagrams; stresses in beams; beam deflections by double integration and area—moments; statically indeterminate beams, torsion, principal stresses. Prerequisite: Engrg 57. Concurrent: Math 64. 3 s.h. (w)
PROFESSOR ROWE AND ASSISTANT PROFESSOR ARGES

ENGRG 109. MECHANICS OF MATERIALS LABORATORY.—Study and use of testing machines and strain gages; tests to determine significant physical properties of the common engineering materials; experimental verification of the elementary theory of structural members. Must be preceded or accompanied by Engrg 107. 1 s.h. (w) ASSISTANT PROFESSOR ARGES

ENGRG 115. DYNAMICS.—General principles of dynamics as applied to particles and rigid bodies. Translation, rotation, general plane motion, work and energy, impulse and momentum, gyroscopic motion. Prerequisite: Engrg 57 or Engrg 60. Concurrent: Math 64. 3 s.h. (w) ASSOCIATE PROFESSORS GARDNER AND PALMER

ENGRG 128. FLUID MECHANICS.—Physical properties of fluids, fluid statics, continuity and energy principles, pressure-momentum principle, elementary principles of turbines and pumps, flow of a real fluid, dimensional analysis and dynamic similarity, fluid flow in closed conduits and in open channels, fluid measurements. Prerequisite: Engrg 115 or ME 52, Math 64. 3 s.h. (w)
PROFESSOR WILLIAMS AND ASSISTANT PROFESSOR HARRAWOOD

ENGRG 151. *AIRCRAFT STRUCTURES.—Fundamental theory of stress analysis of airplane components including an introduction to design principles and methods. Space structures, inertia forces, load factors, properties of aircraft materials, buckling of thin sheets and curved panels, semimonocoque structures, plasticity, shear flow theory, semitension field beams. Seniors only. Prerequisite: Engrg 107. 3 s.h. (w) PROFESSOR ROWE

ENGRG 153. *ARCHITECTURAL ENGINEERING.—The application of engineering principles to architecture; the influence of engineering function and trends on design; the interrelationship of engineering with architecture; the analy-

* Offered only upon sufficient demand; enrollment limited.

sis of structural details and of processes of construction; field trips and inspection of construction projects. Prerequisite: permission of instructor. 3 s.h. (w)
ASSISTANT PROFESSOR HAINES

ENGRG 169. *LEGAL ASPECTS OF ENGINEERING.—A course designed to introduce engineering students to those aspects of the law encountered in the practice of engineering. Subjects included are: contracts and specifications, real and personal property, torts, insurance, agency, equity, evidence, labor management, sales, expert testimony, engineering registration and ethics. Open to seniors only. 3 s.h. (w) MR. OLIVE

ENGRG 170. *PATENT LAW FOR ENGINEERS.—A course designed to familiarize engineering students with the legal principles and procedures for protecting patentable inventions, such as drafting and analysis of specifications and claims, study of infringements, assignments, licenses, and record documentation. Open to seniors only. 3 s.h. (w) MR. OLIVE

* Offered only upon sufficient demand; enrollment limited.

THE GRADUATE SCHOOL OF ARTS AND SCIENCES

Fall Semester begins September 22, 1960

Spring Semester begins February 2, 1961

Admission

PREREQUISITES. A student seeking admission to the Graduate School of Arts and Sciences of Duke University must have received an A.B. or B.S. degree (or the equivalent in the case of foreign students) from an accredited institution. His undergraduate program should be well rounded and of such quality as to give positive evidence of capacity for graduate study. Normally he should have majored in the area of his intended graduate study. Many departments list specific prerequisites. Students are urged to anticipate at least one of the language requirements.

STUDENTS REQUIRING ADMISSION. Admission is required of 1) all students who intend to pursue study toward a degree offered by the Graduate School, 2) all other students who desire credit for whatever purpose for graduate courses—except students who register only in the Summer Session.

PROCEDURE FOR ALL APPLICANTS. A student seeking admission to the Graduate School should request the Dean of the Graduate School to send an application blank. This he should fill out completely and return promptly. In addition he should provide the following supporting documents: (1) a transcript or transcripts of all his undergraduate and graduate work mailed directly by the registrar to the Dean; (2) as soon as possible, supplementary transcripts showing completion of work not completed when the earlier transcript was made; (3) three letters of recommendation written by persons best qualified to judge him as a prospective graduate student and mailed directly to the Dean; (4) scores on the aptitude and major subject Graduate Record Examinations, always acceptable to strengthen the application and always to be reported if the examinations have been taken, desired but not required by the Departments of Biochemistry, Economics, Psychology, and Sociology, and required by the Department of Philosophy. (Information on times and places of Graduate Record Examinations can be provided at the appplicant's college or by the Educational Testing Service, 20 Nassau Street, Princeton, New Jersey.)

ADDITIONAL PROCEDURE FOR FOREIGN STUDENTS. Fully qualified students from outside the United States are welcomed in the Graduate School to take courses and in many instances to study toward a degree. In applying for admission the foreign student should,

in addition to the information required of all students, submit with his application (1) if his native language is not English, a statement by a qualified official that the applicant can read, write, speak, and understand English well enough to pursue a program of graduate study, (2) a statement certified by a responsible person that his finances are sufficient to maintain him during his stay at Duke University, and (3) a statement by a qualified medical doctor describing any emotional or physical illness the applicant has had during the previous five years.

All foreign students whose native language is not English will be examined during their first registration period for competence in the use of oral and written English. Until competence is determined, admission and arrangements for an award involving teaching must remain provisional. Such students as are found to lack the necessary competence will be required to enroll in the three-unit non-credit course English for Foreign Students and to reduce their course or research program three units if necessary.

CLOSING DATES FOR APPLICATIONS. Because applications cannot be reviewed until all required supporting documents are filed, applications should be submitted at least *two weeks* before the closing dates listed below:

Fall semester, admission and award	February 15
Fall semester, admission only	August 1
Spring semester, admission only	January 1
Summer Session,* First Term	May 10
Summer Session,* Second Term	June 16

NOTIFICATION AND STATUS. When the application is approved, the student will receive a letter of admission and an acceptance form. The process of admission is not complete until the statement of acceptance has been returned.

Applicants who are admitted will be offered full admission, provisional admission, or non-degree admission. *Provisional admission* is offered to students who (1) appear to warrant admission but who do not fully comply with admission requirements, for a trial period of one semester or a minimum of 12 hours of course work, or (2) are admissible except that the application lacks a letter of recommendation, a supplementary transcript, or required test scores, or some other required information. *Non-degree admission* is offered to students who (1) have no intention of taking an advanced degree at Duke

* Students seeking admission to the Graduate School for study in the Summer Session should make application to the Dean of the Graduate School as well as to the Director of the Summer Session. It is the applicant's responsibility to make certain that his application is complete and in order before the dates specified.

University but wish to take courses for accreditation, for transfer to other institutions, or for other purposes, (2) do not fully meet admission requirements but wish to further their academic interests, and (3) who apply late and must register before the application can be fully considered. Graduate credit earned under *provisional status* may be applied toward an advanced degree at Duke University if and when upon review the student is granted full admission; graduate credit earned under *non-degree status* may not be applied toward an advanced degree at Duke University. Late applicants ((3) above) will be granted full admission if admission can be completed within two weeks of registration.

Registration

WHO MUST REGISTER. (1) All students who enter course work or residence for credit; (2) all students who have completed minimum requirements for an advanced degree, but continue to use the facilities of the University in their research; (3) all students in *in absentia* status; (4) all students who wish merely to audit a course or courses.

REGISTRATION. After the applicant has received notification of his admission to the Graduate School and has returned his statement of acceptance of admission, he may present himself for registration. During the registration periods, announced in the *Bulletin,* he first confers with the Director of Graduate Studies of his major department, who prepares a course card, listing the course work to be taken during the semester. The student then presents this course card to registration officials, who enroll him officially in his courses.

LATE REGISTRATION. All students are expected to register at the time stated in the *Bulletin. Those registering late are subject to a late registration fee of five dollars.*

CHANGE OF REGISTRATION. During the academic year within a period of fourteen days from the specified day of registration, students may change their schedules with the approval of the Director of Graduate Studies.

Degrees Offered

THE DEGREES OFFERED. The Graduate School of Arts and Sciences now offers the following degrees: Master of Arts (A.M.), Master of Science (M.S.), Master of Education (M.Ed.), Master of Arts in Teaching (M.A.T.), Doctor of Philosophy (Ph.D.), and the Doctor of Education (Ed.D.).

General Regulations Governing Master's Degrees

RESIDENCE REQUIREMENTS. Candidates for all Master's degrees must spend, as a *minimum,* one full academic year, or its equivalent in Summer Session terms, in residence at Duke University. Those who wish to complete their degrees wholly in the Summer Session must be in residence for five terms. Often more time will prove necessary in either case, depending upon the nature of the student's research problem if a thesis is offered and upon the student himself.

A Master's degree *without thesis* requires a *minimum* of 30 units of graduate credit in course and seminar work properly distributed between major and minor fields.

A Master's degree *with thesis* requires a *minimum* of 30 units of graduate credit; not less than 24 units must be in course or seminar work properly distributed between major and minor fields. If after completion of the 30-unit requirement the candidate remains in residence, he must register for a minimum of 3 units of residence per semester to be added to any course-seminar registration of 6 units or less, 2 with 7 units, 1 with 8 units, and none with 9 or more units.

A Master's candidate who presents a thesis when not registered in residence will be charged 3 units of residence for the semester or term in which the thesis is presented.

CANDIDACY FOR THE MASTER'S DEGREE. To be considered as a candidate for a Master's degree (A.M., M.S., M.Ed., M.A.T.), the graduate student must (1) have made passing grades in all courses taken during the first period of residence (if he registers for fewer than 12 units of graduate courses during his first period of residence, he must make passing grades on the initial 12 units of graduate courses), (2) have made a grade of *G* or *E* on at least 3 units of this work, and (3) have received the approval of the major department (or in the case of the M.A.T., of the supervisory committee).

TRANSFER OF GRADUATE CREDITS.

Under certain circumstances a maximum credit of 6 units may be allowed for graduate courses completed elsewhere. The acceptance of credit up to this amount, however, will not reduce the minimum period of full-time registered residence at Duke University.

With the approval of both the student's major department and the Dean of the Graduate School, a student who is granted such transfer credit may be permitted to register for as much as 12 units of thesis research instead of the usual 6 units. Or he may be permitted to fill out his schedule with as much as 6 units of further undergraduate training or 6 units of required language courses on the undergraduate level. In no case will credit be allowed for extension or correspondence courses.

TIME LIMITS FOR COMPLETION OF MASTER'S DEGREES. The candidate for the Master's degree who is in residence for consecutive academic years should complete all requirements for the degree within two calendar years from the date of his first registration in the Graduate School. Any candidate must complete all requirements within six calendar years of his first registration.

Credits earned over a long period of time cannot be credited toward a degree.

THE THESIS. The thesis should demonstrate the student's ability to collect, arrange, interpret, and report pertinent material on his special research problem. Although a publishable document is not required, the thesis must be written in an acceptable style and should exhibit the student's competence in scholarly methods and procedures. Requirements of form are set forth in the *Manual of Style for Theses and Dissertations.*

The Master of Arts Degree

PREREQUISITES. As prerequisites to graduate study in his major subject, the student must have completed a *minimum* of 12 semester hours of approved college courses in that subject, and 12 additional semester hours in that subject or in related work. Since some departments require more than 12 semester hours, the student should read carefully the special requirements listed by his major department, which are included as headnotes to the course offerings in the *Bulletin.*

LANGUAGE REQUIREMENTS. The candidate for the A.M. degree must have a reading knowledge of at least one foreign language. (The several departments reserve the right to specify which foreign languages are acceptable.) The language requirements must be satisfied before the Master's examination is taken.

MAJOR AND MINOR SUBJECT. In his graduate work the stu-

dent must present acceptable grades for a minimum of 24 units of graduate courses. Of these, at least 12 units must be in the major subject. The student must take a minimum of 6 units in a minor subject which is approved by his major department. The remaining 6 units of the required 24 may be taken in either the major or minor department, or in another approved by the major department and by the Dean of the Graduate School. In addition he must present a thesis, which carries a credit of 6 units for which he must register. Thus, his earned credit for the degree totals a minimum of 30 units.

FILING THE THESIS TITLE. At least one month before presenting the thesis or not later than March 1 (March 2 if March 1 falls on Sunday) of the academic year in which the degree is expected to be conferred, the student must file with the Dean of the Graduate School, on the official form, the title of the thesis and declaration of intention to graduate. The title must have the approval of the Director of Graduate Studies in the major department, and of the instructor under whose direction the thesis will be written. During the Summer Session title and declaration must be filed at least one month prior to first presentation of the thesis.

PREPARING THE THESIS. All basic requirements for preparing the thesis are described in the *Manual of Style for Theses and Dissertations* obtained at the Duke University Book Store, West Campus. The thesis must be typed on the following grade of paper: the original must be green-lined paper of at least sixteen-pound weight, the three copies must be on paper of at least thirteen-pound weight. Both grades of paper must be of seventy-five percent rag content. Thesis binding and other particulars are prescribed in the *Manual.*

SUBMITTING THE THESIS. Four bound, typewritten copies of the thesis must be submitted in approved form to the Dean of the Graduate School on or before May 1 (May 2 if May 1 falls on Sunday) preceding the June commencement at which the degree will be conferred. The copies will then be distributed to the several members of the examining committee. The thesis must be submitted to the Graduate Office from three to five days before the scheduled date of the student's examination. Students should plan to allow at least four days for the process of binding the thesis at Seeman Printery.

THE EXAMINING COMMITTEE AND THE EXAMINATION. The instructor who directs the thesis appoints an examining committee composed of the director of the thesis and two other members of the Graduate Faculty, one of whom must be from a department other than that of the major. This committee is submitted for approval to the Dean of the Graduate School when the thesis is first presented.

The candidate appears before this committee for an examination

which lasts for about one and one-half hours. The subject matter covered in the examination is usually restricted to the thesis and to the major field.

If the candidate passes his examination, the examining committee certifies this fact by signing the title page of the thesis. The candidate then returns the original and one carbon copy of the thesis to the Dean of the Graduate School, who deposits them in the University Library.

The Master of Science Degree

PREREQUISITES. The degree of Master of Science is offered in the fields of Civil, Electrical, and Mechanical Engineering. As prerequisites to this degree the student must have earned a Bachelor's degree from an accredited engineering college and have completed a minimum of 12 semester hours work in the major field.

FOREIGN LANGUAGE. There is no foreign language requirement for this degree.

MAJOR AND MINOR SUBJECTS. The work for the Master of Science degree is designed to provide a broad foundation in the science of civil, electrical, and mechanical engineering. The student must present acceptable grades for a minimum of 24 units of graduate courses. Of these, at least 12 units must be in the major subject. He must also take a minimum of 12 units of minor work in the Departments of Mathematics and either Physics or Chemistry. In addition to these he must present a thesis, which carries a credit of 6 units. Thus his earned credit for the degree totals a minimum of 30 units.

REGULATIONS AND PROCEDURES. The regulations and procedures and the provisions for examination and an examining committee are the same as those for the Master of Arts degree.

The Master of Education Degree

PREREQUISITES. Before a student is admitted to graduate study for this degree, he should have completed, on the undergraduate level, a minimum of 18 semester hours of approved work in Education.

Before the degree is conferred the student must have had one year of actual teaching experience, or have met certification requirements by supervised student teaching in an accredited school. Such supervised student teaching may be at either the undergraduate or the graduate level.

REQUIREMENTS FOR THE DEGREE. The Master of Education degree may be earned either with or without the presentation of a thesis.

Without thesis: The required work includes a departmental major (Elementary Education, School Administration and Supervision, or Secondary Education) of at least 12 units, and a minor of at least 6 units outside the Department of Education. The remaining 12 units are elective within the area of Education and the minor field, but require the approval of the student's major adviser and the Director of Graduate Studies.

Toward the end of his residence the student must pass a comprehensive examination on his departmental major. This examination shall be prepared and conducted by the instructors of the student's major as designated by the Director of Graduate Studies of the Department of Education. Request to take this examination should be made to the Director of Graduate Studies at least two weeks before the date on which the examination is to be conducted.

With thesis: Students who elect this plan are permitted to substitute a thesis for 6 units of the required course work. The thesis subject must be approved by the instructor who is to direct it, and by the Director of Graduate Studies.

In addition to the thesis, the student must present at least 24 units of course credit. Of these, 12 units must be taken in the student's departmental major. Six units, constituting a minor, must be taken outside of the Department of Education. The remaining 6 units are elective within the area of Education and the minor field, but require the approval of the student's major adviser and the Director of Graduate Studies.

The regulations governing the thesis are the same as those for the Master of Arts degree.

The Master of Arts in Teaching Degree

PREREQUISITES. The degree of Master of Arts in Teaching is designed for teachers already in service and for recent graduates of liberal arts colleges who wish to enter public school teaching.

A student should normally have completed a minimum of 12 semester hours in his proposed major subject and an additional 12 semester hours in that or related subjects. Should a student wish to undertake a graduate major different from his undergraduate major, the prerequisites may be modified upon the recommendation of the student's committee and the approval of the Dean of the Graduate School.

PROGRAMS FOR THE DEGREE. Either of two programs may be arranged, in consultation with the student's committee:

A. A major in Education of 18 to 24 units and 6 to 12 units in non-education courses.

B. A major in non-education courses of 18 to 24 units and 6 to 12 units in Education.

In both programs a minimum of 30 units is required.

The non-education courses are to be taken in one or more subjects ordinarily taught in the secondary schools. The amount and distribution of this work will be determined by the needs of the individual student. A major in Biological Sciences or in Physical Sciences is possible in this program.

The Master of Arts in Teaching may be earned with or without the presentation of a thesis. If a student, in consultation with his committee, elects to present a thesis, 6 units of the total of 30 units required will be allotted to thesis research. He will then be required to complete 24 units of course credits. The regulations governing the thesis, are the same as those for the A.M. Candidates for the Master of Arts in Teaching who have not had teaching experience are required to take Education 215-216 in which case a minimum of 36 units is required.

THE COMMITTEE. Each candidate for the degree will be assigned a committee, appointed by the Director of Graduate Studies in the major department or area. This committee will consist of three members, at least one of whom will be from the Department of Education, and at least one from another department. The chairman of the committee will normally be chosen from the department of the major.

The Doctor of Philosophy Degree

The Ph.D. degree is essentially a research degree. Although course work is a necessary part of the student's program, the mere accumulation of course credits will not be sufficient for attaining this degree. The granting of the Ph.D. is based primarily upon the student's knowledge of a specialized field of study and upon the production of an acceptable dissertation embodying the results of original research.

REQUIREMENTS FOR THE PH.D. DEGREE. The formal requirements, discussed in detail below, for the Ph.D. degree are as follows: (1) foreign languages; (2) major and minor courses; (3) supervisory committee for program of study; (4) residence; (5) preliminary examination; (6) dissertation; (7) final examination. In order to be considered for candidacy for the Ph.D. degree, the student must have passed all of his course work in the first year of graduate study; on at least 9 units of course work he must have made a grade of *G* or better.

FOREIGN LANGUAGES. Normally, a reading knowledge of both French and German is required.

A student working toward the doctoral degree should complete the language requirements for that degree by the end of his first year of residence. If he fails to meet these requirements by the end of his third semester of residence, he must register in the appropriate special reading course or courses until he has satisfied the requirements.

MAJOR AND MINOR. The student's program of study necessarily demands substantial concentration on courses in his major department. Enough work must be taken in another department to constitute an acceptable minor. Exceptions which permit both the major and minor within the same department are allowed only by the special permission of the Dean of the Graduate School.

COMMITTEE TO SUPERVISE THE PROGRAM OF STUDY. The program of study should normally be submitted during the third semester of graduate work for students who entered with a Bachelor's degree and during the second semester's residence for students entering with a Master's degree or equivalent. The five members of the supervisory committee are appointed by the Dean of the Graduate School upon the recommendation of the Director of Graduate Studies of the major department. This committee, with the instructor who is to direct the student's research serving as chairman, formulates the program of study, which is submitted to the Dean of the Graduate School for his approval. Of the five members, one must be from a department (usually the minor) other than the major department. This committee, with occasional necessary changes, serves also as the examining committee for both the preliminary and the final Ph.D. examinations.

RESIDENCE. For students first registering in September 1959 or thereafter the *minimum residence* requirement is 60 units of graduate credit not more than 30 units of which may be accepted by transfer. Since a full program is 30 units per academic year, the prospective Ph.D. candidate who enters with the A.B. or B.S. degree must plan to spend in residence a *minimum* of two academic years; if he enters with the A.M., his *mimimum* residence is one academic year. If there are undergraduate deficiencies in his program, he may in addition to the minimum requirements be required to take preliminary undergraduate courses for which he will not receive graduate credit. Even if there are no such undergraduate deficiencies, the student's supervisory committee will determine what residence requirements if any above the minimum the student must meet.

Resident doctoral degree students normally register for 15 units per semester, unless they are subject to load limitations dictated by appointment restrictions or by employment. The *normal registration*

will carry through that semester in which the preliminary examination has been passed.

A student who remains in residence after passing the preliminary examination must register for a minimum of 3 units of residence per semester to be added to any course-seminar registration of 6 units or less, 2 with 7 units, 1 with 8 units, and none with 9 or more units.

Candidates not in residence register and pay fees for one unit each semester *in absentia* if they are to remain candidates.

Any courses, language certifications, or other credits for advanced standing which are more than six calendar years old at the beginning of the semester in which preliminary examinations are passed will not be accepted toward fulfilling the minimum requirements of the doctoral degree.

CREDIT FOR SUMMER WORK. Credit earned in the Summer Session will not reduce the minimum required residence of one academic year.

PRELIMINARY EXAMINATION. A student is not accepted as a candidate for the Ph.D. degree until he has passed the preliminary examination. A transfer student who may have passed a preliminary examination elsewhere must nevertheless take the examination in this Graduate School. The examination ordinarily covers both the major and minor fields.

Normally the student should pass this examination by the end of his second year of resident graduate work. If he has not passed it by the middle of his third year, he must file with the Dean of the Graduate School a statement explaining the delay and setting a date for the examination. Except under unusual circumstances, extension will not be granted beyond the end of the third year.

PRIVILEGE OF RE-EXAMINATION. Should the student fail the preliminary examination, he may apply, with the consent of his supervisory committee and of the Dean of the Graduate School, for the privilege of a second examination to be taken no sooner than six months after the date of the first. Failure on the second examination will render the student ineligible to continue his program for the Ph.D. degree at Duke University.

THE DISSERTATION. The dissertation is expected to be a mature and competent piece of writing, embodying the results of significant and original research.

TIME LIMITS. The expectation is that the doctoral dissertation will be submitted and accepted within two calendar years after the preliminary examination is passed. Should the dissertation not be submitted and accepted within four calendar years after the examination, the candidate, with the approval of his committee, may petition the Dean of the Graduate School for an extension of one year.

If the dissertation should not be submitted and accepted within five years after the examination, to remain a candidate for the degree the student must pass a second preliminary examination. In such a case, the time limit for submitting the dissertation will be determined by the Dean of the Graduate School and the candidate's committee.

For the student registered for the first time in September 1959 these limits are fully effective. For the student who registered before September 1959 the time limits are effective as though he first registered at that time.

Filing Title. On or before March 1 (March 2 if March 1 falls on Sunday) preceding the June commencement at which the degree is expected to be conferred, the student must file with the Dean of the Graduate School, on the official form to be obtained from the Graduate Office, the title of the dissertation. This title must receive the written approval of both the Director of Graduate Studies of the student's major department and the professor who directs the dissertation.

Form. The basic requirements for preparing the dissertation are described in the instructions for microfilming (see below) and in the *Manual of Style for Theses and Dissertations* to be obtained from the Duke University Book Store, West Campus. The dissertation must be typed on the following grades of paper: the original must be on green-lined paper of at least sixteen-pound weight; the three copies must be on paper of at least thirteen-pound weight. Both grades of paper must be of seventy-five percent rag content.

Submitting Dissertation. The dissertation must be completed to the satisfaction of the instructor who directs it. Four typewritten copies, the original unbound and three copies bound, must be deposited with the Dean of the Graduate School on or before *April 15* preceding the June commencement when the degree is to be conferred. The dissertation must be submitted to the Graduate Office from seven to ten days before the scheduled date of the student's examination.

PUBLICATION ON MICROFILM. All doctoral dissertations will normally be published on microfilm through University Microfilms, Ann Arbor, Michigan. Authors may, if they wish, also copyright them. The abstract will be published in *Dissertation Abstracts. Before final typing is completed, the candidate should obtain in the Graduate Office detailed instructions on the procedure* together with a microfilming agreement which is signed and returned when the dissertation is finally deposited in the Graduate Office.

In brief, the original copy of the dissertation, in clean type, will remain unbound except for a spring binder. When the carbon copies are bound, a cover, unattached, is prepared for the original copy. Ten copies of an *abstract,* carefully written and not more than 600 words

long, are submitted when the dissertation is first presented to the Graduate Office. A non-returnable dissertation fee of $25 is charged for handling and microfilming. If copyright is desired, an additional fee is charged of $6 plus 2½ cents per page.

FINAL EXAMINATION. The final oral examination shall be primarily on the dissertation. Questions may, however, be asked in the candidate's major field.

If a student fails his final examination, he may be allowed to take it for a second time, but not sooner than six months from the date of his first. Permission to take the second examination must be obtained from the instructor who directed the dissertation and from the Dean of the Graduate School. Failure to pass the second examination renders the student ineligible to continue work for the Ph.D. degree at Duke University.

The Doctor of Education Degree

The Doctor of Education is a professional degree planned for those who are, or intend to become, school administrators, supervisors, directors of instruction, curriculum consultants, or college teachers of education.

ADMISSION. The candidate for the Ed.D. degree must meet the same requirements for admission to the Graduate School as the candidate for the Ph.D. degree. In addition to these uniform requirements, the candidate for the Ed.D. (1) must have had at least two years' experience in educational work; (2) must present strong letters of appraisal and recommendation from persons well qualified to speak with authority of his abilities; and (3) must present himself, if possible, for a personal interview. The Standing Committee on the Ed.D. degree reserves the right to insist upon an interview.

RESIDENCE, ETC. Regulations concerning residence requirements, grades required during the first year of graduate study, and the preliminary examination are the same as those for the Ph.D.

FOREIGN LANGUAGES. There are no foreign language requirements for the Ed.D. degree.

PROGRAM OF WORK. The candidate for the Ed.D. degree will choose as his major field either Educational Administration and Supervision or Curriculum and Instruction.

Candidates in Administration and Supervision will take approximately 24 units in that field, including the seminar in School Administration. In addition, they will take approximately 24 units in other professional courses and a minor of at least 24 units approved by the candidate's supervisory committee and the Standing Committee on the Ed.D. degree.

Candidates in Curriculum and Instruction will take approximately 24 units in Curriculum and Instruction. In addition, they will take from 12 to 24 units in other professional courses, and a minor of from 24 to 36 units in the humanities, the natural sciences, or the social sciences, exclusive of professional education.*

The program of work for each candidate must be approved by the Standing Committee for the Ed.D. degree.

DISSERTATION. The candidate must write a dissertation, for which the formalities of presentation, including its defense in a final examination, are the same as those for the Ph.D. degree. The type of dissertation will depend upon which of the following plans the candidate adopts:

Plan A. A candidate choosing Plan A will write a dissertation which is expected to be a mature and competent piece of writing, embodying the results of significant and original research. It must be, in essence, a contribution to knowledge.

Plan B. A candidate choosing Plan B will serve at least a year in an administrative post, or a teaching position in an elementary or secondary school, subsequent to the completion of the second year of residence. His dissertation may be concerned with a problem, or several closely related problems, growing out of this experience. Although the dissertation written under Plan B is of a practical nature, it must demonstrate the candidate's ability to investigate and report on a significant phase of education in his major field.

PUBLICATION ON MICROFILM. The dissertation will be published on microfilm, as is the dissertation for the Ph.D.

FINAL EXAMINATION. Regulations for the final examination are identical with those for the Ph.D. degree.

General Regulations

Grades, Hours, and Credits

Although ideally graduate study is principally individual reading, research, and laboratory experimentation under guidance, academic progress in the United States is generally measured and recorded in terms of course hours and credits. Peculiar to graduate study is the term *residence,* also generally measured in hours, to designate individual study apart from courses, such as writing a thesis and preparing for general examinations. Since September 1959 in this Graduate School credit for courses and seminars, research, and residence, and corresponding tuition and fees have been stated in terms of UNITS.

*Revision of unit requirements is now being considered. Please consult the Department for current status.

According to conventional measurement ONE UNIT is equivalent to ONE SEMESTER HOUR. Thus a course previously described as carrying a credit of 3 s.h. now carries a credit of 3 units.

CREDITS EARNED OUTSIDE THIS GRADUATE SCHOOL.

(1) *Graduate Credit Earned before the A.B. Degree Is Granted.* Ordinarily no credit will be allowed for graduate courses earned before a student has been awarded his A.B. or B.S. degree. However, an undergraduate student at Duke University who, at the beginning of his final semester, lacks no more than 9 semester hours of fulfilling the requirements for the A.B. or B.S. degree, may obtain permission from the Dean of the Graduate School to enroll for graduate courses sufficient to bring his total program to fifteen hours a week. Such graduate courses will be credited toward the A.M., M.S., M.Ed., or M.A.T. degree, provided that the student meets the requirements for admission to the Graduate School, and that he is duly registered in the Graduate School at the beginning of that term.

(2) *Transfer of Graduate Credits.* Credit for graduate course work earned at another institution will be determined only after a student has spent one semester at Duke University. After completing his first semester, the student should file a request that his credits be reviewed and a decision made.

(3) *Graduate Credit for Courses Taken in the School of Law.* Upon the recommendation of the Director of Graduate Studies, and upon the approval of the Dean of the Graduate School, students in the social sciences may take certain courses in the School of Law for graduate credit. In some instances courses in the School of Law may be considered as fulfilling a student's requirements for a minor. To register for such courses, the student should present a letter from his Director of Graduate Studies to the Dean of the School of Law requesting permission to register for certain specified courses.

(4) *Reciprocal Agreement with the Consolidated University of North Carolina.* Under a plan of co-operation between the Consolidated University of North Carolina and Duke University, students regularly enrolled in the Graduate Schools of the Consolidated University during the regular academic year, and paying full fees to that institution, may be admitted to a maximum of two courses per semester in the Graduate School of Duke University upon payment of a nominal registration fee of two dollars and of any other special fees regularly required of all students. Under the same arrangements, students in the Graduate School of Duke University may be admitted to course work at the Consolidated University of North Carolina. This arrangement is not in effect during Summer Sessions.

GRADES. Grades in the Graduate School are as follows: *E, G, S, F,* and *I*. *E* (exceptional) is the highest mark. *G* (good) and *S* (satisfactory) are the remaining passing marks. *F* (failing) is below passing, and *I* (incomplete) indicates that some portion of the student's work is lacking, for a satisfactory reason, at the time the grades are reported. The instructor who gives an *I* for a course specifies the date by which the student must have made up the deficiency. In no case may an extension be granted beyond one calendar year from the date the course ended. If the course is not completed, a statement of *No Credit* is made upon the student's record.

COURSES PRIMARILY FOR UNDERGRADUATES. Students granted provisional admission may on occasion be required as part of their program to take undergraduate courses as prerequisites to continued graduate study. Undergraduate courses thus taken and others elected by the student will carry no graduate credit.

In exceptional cases, 100-level courses *outside the major department* may be taken for graduate credit to a maximum of two one-semester courses or one year-course not exceeding a total of 8 units, when approved by the Directors of Graduate Studies in the major department and in the department in which the course is listed and the supervisor of the program.

NORMAL PROGRAMS. Normally graduate students who do not carry teaching or assisting duties carry a full load of graduate work until the requirements of the several degrees are met. A full load is 15 units a semester or 30 units for the academic year. Six units is a maximum load for one term of the Summer Session.

WITHDRAWAL AND INTERRUPTION OF PROGRAM

From a Course. After 14 days from the date of registration students may drop courses only with the approval of the Director of Graduate Studies, the instructor of the course to be dropped, and the Dean of the Graduate School. If the course is dropped without the necessary approval, the permanent record will list the course as *Dropped Unofficially, F.* If a course is dropped 30 days or more after the beginning of the class for the semester involved, the status of the student at the time of withdrawal from the course will be determined and be indicated by the designation *Withdrew Passing* (W.P.) or *Withdrew Failing* (W.F.)

From the Graduate School. The University reserves the right, and matriculation by the student is a concession of this right, to ask the withdrawal of any student whose conduct at any time is not satisfactory to the University, even though no specific charge be made against the student. If a student wishes for any reason to withdraw from the Graduate School he should notify both the Director of

Graduate Studies in his major department and the Dean of the Graduate School prior to the date of his expected withdrawal.

Students who find it necessary to interrupt their program of study for a period longer than a summer vacation should, before departure, leave with the Graduate Office a statement of the reason for interruption, mailing address, and expected date of return.

TRANSCRIPT. A student who wishes to transfer his credits from Duke University to another institution is entitled to one free transcript of his record. A fee of one dollar, payable in advance, is charged for each additional copy. Requests are directed to the Central Records Office.

SIZE OF CLASSES. Classes which carry graduate credit are limited in size to twenty-five students. In exceptional cases this regulation may be modified, but only by permission of the Executive Committee of the Graduate School Faculty on the recommendation of the department concerned. When courses numbered 200 to 299 carry graduate credit, they may include no more than three juniors and such juniors must, at the time of registration, have an over-all B average.

Language Requirements

Because a requirement for the A.M. degree is mastery of one acceptable foreign language, and for the Ph.D. is mastery of two, the prospective graduate student should attain mastery of at least one acceptable foreign language and preferably two before applying for admission. The facilities for graduate study are highly specialized and costly. The student who must lay them aside to acquire what he could have learned as an undergraduate is wasting his time.

ACCEPTABLE LANGUAGES. The languages normally required are French and German, but with the approval of the Dean of the Graduate School, a student may substitute for either of these another language which has a definite relation to the candidate's program of work for the degree.

MEETING THE REQUIREMENT. Language requirements may be met in three ways—by transcript, by a written examination taken upon first registration, by a reading examination.

1. BY TRANSCRIPT. A candidate for the A.M. degree may meet the language requirement by a transcript showing the completion, prior to earning the A.B. or B.S., of the third college year of one acceptable language or the second college year of each of two acceptable languages. A student who elects this procedure must, with the endorsement of the Director of Graduate Studies in his

major department, write the Dean of the Graduate School for permission to do so.

Under the conditions stated below, a candidate for the Ph.D. may, with the permission of the Dean of the Graduate School and of the chairman of the program committee, meet one of his language requirements by filing a transcript or certification showing that he has passed a comparable examination elsewhere. The conditions are that the examining graduate school have substantially the same language requirements as this Graduate School, that the examination have been passed while the student was pursuing a Ph.D. program in the same field as his declared major at Duke University or that the examination was required of all Ph.D. candidates regardless of field, and that the examination have been passed recently enough to indicate that the student retains command of the language.

2. BY WRITTEN EXAMINATION. On Monday of the fall registration period and on the day before spring registration, Reading, Vocabulary, and Grammar tests in French and German are offered (see the Calendar for hour and place). Any entering student engaging upon an A.M. or Ph.D. program who has not already taken these tests may take them. On the basis of his scores the student will (1) be certified as meeting requirements in these languages, (2) be advised to present himself for the regular reading examinations at the first opportunity, or (3) be advised to enroll in the special reading courses (see below).

3. BY READING EXAMINATION. At dates listed in the Calendar reading examinations in French, German, Spanish, and when requested Italian are offered. Reading examinations in other languages must be separately arranged.

Students who require re-examination at scheduled times will be charged $5.00 for each re-examination; if special times are necessary, the fee will be $10.00.

SPECIAL READING COURSES. Special courses designed to assist graduate students in acquiring a reading knowledge of French or German are offered for three hours a week, French during the fall semester, German during the spring semester and The Summer Session. A student who registers for either course must reduce his normal load of graduate courses by three units, with no reduction in fees. No auditors are permitted in these courses at any time. Undergraduates may not enroll during the academic year and may, with permission of the Dean of the Graduate School, in the Summer Session only if total registration permits.

REQUIREMENTS FOR FOREIGN STUDENTS. Foreign students whose native language is not English are, during their first registration period, required to take a test for minimum competence in English. Such students, with the approval of the Director of Graduate Studies in their major department, may request permission of the Dean of the Graduate School to substitute English for *one* of the required foreign languages. If permission is granted, a reading test in English, like those in French and German, will be arranged.

Awards and Fees

Fellowships, Scholarships, and Assistantships

FOR the encouragement and financial assistance of graduate students of marked ability, Duke University has established a considerable number of fellowships, scholarships, and assistantships. The stipends for these range from $500 to $3,000. Holders of grants pay tuition and other fees regularly required of all graduate students.

Fellows and scholars pay full tuition and fees and are registered for a full schedule of course work and receive full residence credit. In general, assistants pay 12 units tuition and fees, are registered for 12 units, and receive 12 units residence credit.

APPLICATION FOR GRANTS. Applications for these grants, along with all supporting documents, must be submitted on or before February 15. Notification of awards is made about April 1. Late applications will be considered, should any vacancies occur in the list of appointees. No appointment is made for longer than one academic year.

Further information and application forms may be obtained from the Dean of the Graduate School, Duke University.

Tuition, Fees, and Expenses

GENERAL FEES IN THE ACADEMIC YEAR. The following table shows the general fees and charges collected from all students. All fees for each semester are due and payable, unless otherwise specified, at the time of registration for that semester. No student is admitted to classes until arrangements have been made with the Treasurer of the University for the settlement of fees.

Tuition and general fees* ($32.50 per unit)	$487.50
Athletic Fee, not including federal tax, optional, per year, payable in the fall semester	10.00
Room rent (see detailed statement in the Graduate School *Bulletin*)	
Fee for Microfilming, payable by candidates for a doctoral degree when the dissertation is presented to the Graduate Office after the final examination	25.00

* General fees, in lieu of most special charges, include the following fees: Matriculation, Medical, Library, Damage, Commencement, Diploma, and an average of the Laboratory and Materials Fees.

Tuition and fees for a full semester program of 15 units amount to $487.50. For a part program, tuition and fees are computed at the rate of $32.50 per unit.

Facilities for Graduate Study

The Libraries and Research Facilities

Graduate students have access to the General Library and the various school and departmental libraries. Such collections total 1,390,540 volumes, including many large and significant special collections. Science laboratories are large and well equipped for general and special research in botany, zoology, physics, chemistry, and medicine. The Duke Forest of eight thousand acres provides a large practical laboratory for forest research. Through the University's cooperative sponsorship of the Oak Ridge Institute of Nuclear Studies, graduate students are able to use the facilities of the National Laboratories at Oak Ridge. A detailed description of the libraries and research facilities is given in the *Bulletin of the Graduate School of Arts and Sciences.*

Graduate Study in the Summer Session

Graduate students who wish to work toward advanced degrees in the Summer Session, particularly in chemistry, economics, education, English, history, mathematics, religion, sociology, Spanish, and zoology, will find a wide selection of courses offered by members of the Duke faculty and by visiting professors. Other departments ordinarily offering work leading to the A.M. degree are botany, political science, and psychology. Thesis research for advanced graduate students is available also in other departments, such as botany, forestry, and physics.

Students who wish to be admitted to the Graduate School for work in the Summer Session should make application to the Dean of the Graduate School, as well as to the Director of the Summer Session, and should return the completed application, with supporting documents, before May 10, for admission to the first term, and before June 16, for admission to the second term.

Courses of Instruction

In general, courses with odd numbers are offered in the fall semester, those with even numbers in the spring semester. Double numbers separated by a hyphen indicate that the course is a year-course and must normally be continued throughout the year if credit is received. A student must secure written permission from the instructor in order to receive credit for either semester of a year-course. Double numbers separated by a comma indicate that although the course is a year-course, credit may be received for either semester without special permission.

Normally, courses which bear no date are offered every year; those marked with an asterisk are offered only when the need arises.

Note: In each department the number 399 is reserved to designate special (individual) readings in a specified area and supervised by a regular member of the Graduate staff, credit 1-3 units. When used it appears in this form: [Department] 399, Special Readings in [area], (Instructor), 1 [2 or 3] unit.

AESTHETICS, ART, AND MUSIC

PROFESSOR PATRICK, CHAIRMAN; ASSOCIATE PROFESSORS HALL, MARKMAN, AND SUNDERLAND

AESTHETICS

FOR SENIORS AND GRADUATES

No graduate degree is offered in this department, but the following courses are suggested as possible minors for students majoring in history, literature, philosophy, religion, psychology, or sociology, or in any other interested departments.

221-222. HISTORY OF AESTHETICS.—Theories of art and beauty in the western world from antiquity to the present. Some attention will be given to the developed theories of aesthetics in the Far East. 6 units. (E) (Not 1960-61)

PROFESSOR PATRICK

ART

FOR SENIORS AND GRADUATES

215. RELIGIOUS ART OF THE ANCIENT NEAR EAST.—A specialized study of the development of art, particularly architecture and sculpture, as the material expression of religious ideas in Egypt, Mesopotamia, and in part of Syria and Palestine, to the Persian conquest. 3 units.* (W)

ASSOCIATE PROFESSOR MARKMAN

216. RELIGIOUS ART OF THE CLASSICAL WORLD.—A specialized study of the religious art, particularly architecture and sculpture, of Greece and Rome, with special emphasis on the monuments in the Near East. 3 units.* (W)

ASSOCIATE PROFESSOR MARKHAM

217. AEGEAN ART.—A study of the problems of Aegean art as the forerunner of Greek art and in relation to the contemporary civilization of the eastern Mediterranean world. 3 units. (W) (1960-61) ASSOCIATE PROFESSOR MARKMAN

218. EARLY GREEK ART.—A study of the problems of the origin and development of Greek art in the Geometric period to the end of the Archaic. 3 units. (W) (1960-61) ASSOCIATE PROFESSOR MARKMAN

233. EARLY MEDIAEVAL ARCHITECTURE.—The development of religious architecture from the time of Constantine to the end of the First Romanesque style in the third quarter of the eleventh century. 3 units.* (E)
ASSOCIATE PROFESSOR SUNDERLAND

234. ROMANESQUE SCULPTURE.—The development of sculpture in western Europe from the early Christian period through the culmination of Romanesque art in the west portal of Chartres Cathedral. 3 units. (E) (1960-61)
ASSOCIATE PROFESSOR SUNDERLAND

240. ARCHITECTURE OF NORTH AMERICA.—A study illustrating the transplantation of European architectural customs since the sixteenth century; the time-lag in transit and acceptance of later European developments; the gradual assumption of confident independence in design; and the emergence of international leaders in the United States. 3 units. (E) (1960-61) ASSOCIATE PROFESSOR HALL

ANATOMY

PROFESSOR J. E. MARKEE, DIRECTOR OF GRADUATE STUDIES—405 MEDICAL SCHOOL; PROFESSOR EVERETT, HETHERINGTON; ASSOCIATE PROFESSOR BECKER, DUKE, AND PEELE.

M201. ANATOMY AS RELATED TO LOCOMOTION.—Complete dissection of that part of the body concerned with locomotion and posture. (See also Course M205). September to January. Prerequisites: One year each of biology, chemistry, and physics. 6 units.
PROFESSORS MARKEE AND EVERETT; ASSOCIATE PROFESSORS BECKER AND DUKE

M202. MICROSCOPIC ANATOMY.—Conferences and laboratory work on the morphological characteristics of the tissues of the animal body. The work is based upon a study of fresh and prepared material and is approached from the physiological viewpoint. Sept. to Jan. Hours and credits (maximum 3 units) by arrangement. Prerequisite: adequate training in histology or cytology.
PROFESSORS MARKEE, HETHERINGTON, AND EVERETT; ASSOCIATE PROFESSORS BECKER, DUKE, AND MOSES

M203. ANATOMY OF THE NERVOUS SYSTEM.—A study of the gross and microscopic structure of the human central nervous system, special attention being paid to the structural and functional relationships between the various nuclei and fiber tracts. Feb. to June. Hours and credits (maximum 4 units) by arrangement. Prerequisite: Anatomy M 201. PROFESSORS MARKEE AND EVERETT; ASSOCIATE PROFESSORS PEELE, BECKER, AND DUKE

M204. NEUROANATOMICAL BASIS OF BEHAVIOR.—A study of the gross and microscopic anatomy of the nervous system with emphasis on the structural and functional relationships between tracts, nuclei, and cortical areas. Restricted to graduate students with the equivalent of a major in psychology. (Jan. to June) 3 units. PROFESSOR HETHERINGTON; ASSOCIATE PROFESSOR PEELE

M205. ANATOMY OF THE VISCERA.—This is a study of the Gross Anatomy of the thoracic, abdominal and pelvic organs and the deeper structures of the head. This course may be taken concurrently with M 201. Sept. to Jan. Prerequisites: one year each of physiology, chemistry, and physics. 2 units.
PROFESSORS MARKEE, EVERETT; ASSOCIATE PROFESSORS BECKER AND DUKE

M301. GROSS HUMAN ANATOMY.—A course especially for Ph.D. candidates in Anatomy, comprising a complete dissection of the cadaver. The laboratory work is supplemented by conferences which place emphasis on the biological aspects of the subject. Sept. to June. Hours and credits (maximum 8 units) by arrangement. Prerequisites: adequate training in comparative anatomy and embryology.
PROFESSORS MARKEE AND EVERETT; ASSOCIATE PROFESSORS BECKER AND DUKE

M312. RESEARCH.—Individual investigations in the various fields of anatomy. Credits to be arranged. PROFESSORS MARKEE, EVERETT, HETHERINGTON; ASSOCIATE PROFESSORS PEELE, DUKE, BECKER, AND MOSES

M313-314. ANATOMY SEMINAR.—Weekly meeting of graduate students and staff in which current research problems in Anatomy will be presented. Required of all graduate students who are candidates for the A.M. or Ph.D. degree. 2 units.
PROFESSORS MARKEE, EVERETT, HETHERINGTON; ASSOCIATE PROFESSORS DUKE, PEELE, BECKER, MOSES

DIVISION OF ANCIENT LANGUAGES AND LITERATURE

PROFESSORS CLARK, ROGERS, STINESPRING, AND TRUESDALE; ASSOCIATE PROFESSOR WAY

GREEK

No graduate degree is offered in Greek.

FOR SENIORS AND GRADUATES

201-202. GREEK TRAGEDY. 6 units. PROFESSOR TRUESDALE

257. SOCIAL AND CULTURAL HISTORY OF THE HELLENISTIC WORLD FROM ALEXANDER TO AUGUSTUS.—Lectures, reading, and discussions. This course will not be separately credited without the sequel, Latin 258. 3 units.
PROFESSOR ROGERS

Graduate students of Duke University may attend the American School of Classical Studies in Athens, Greece, without charge for tuition, and they are eligible to compete for the fellowships that are offered annually by the School. These consist of two fellowships in Greek archaeology, and one in the language, literature, and history of ancient Greece, each with a stipend of $2,000. They are awarded mainly on the basis of examinations held in the beginning of February of each year.

LATIN AND ROMAN STUDIES

No graduate degree is offered in Latin.

FOR SENIORS AND GRADUATES

211-212. ROMAN ORATORY.—A survey of the history of Roman oratory, centering about the *Brutus* of Cicero and Tacitus' *Dialogus*. 6 units. (1960-61)
PROFESSOR ROGERS

258. SOCIAL AND CULTURAL HISTORY OF THE GRAECO-ROMAN WORLD.—The Roman Empire as the trustee of Hellenism and Christianity, and its own original contributions to modern civilization; lectures, readings, and discussions. This course continues Greek 257 and will not be separately credited. 3 units.
PROFESSOR ROGERS

SEMITICS

FOR SENIORS AND GRADUATES

201-202. FIRST HEBREW.—The principles and structure of the Hebrew language, with translations of selected Old Testament narratives. 6 units.
PROFESSOR STINESPRING

207-208. SECOND HEBREW.—Samuel or Kings the first semester; Isaiah the second. 6 units.

FOR GRADUATES

304. ARAMAIC.—A study of the Aramaic portions of the Old Testament and selected passages from the Targums, Midrashes, and Talmuds. 3 units.
PROFESSOR STINESPRING

305. THIRD HEBREW.—A study of late Hebrew prose, with readings from Chronicles, Ecclesiastes, and the Mishnah. 3 units. (Not 1960-61)
PROFESSOR STINESPRING

307. SYRIAC.—A study of the script and grammar, with readings from the Syriac New Testament and other early Christian documents. Some knowledge of Hebrew and Aramaic is prerequisite. 3 units. (1960-61) PROFESSOR STINESPRING

309. HISTORY OF THE ANCIENT NEAR EAST.—A survey of the early civilizations of Egypt, Palestine, Syria, and Mesopotamia in the light of Biblical archaeology. 3 units. (Not 1960-61) PROFESSOR STINESPRING

RELATED COURSES IN OTHER DEPARTMENTS

Philosophy 217; Religion 217, 218, 220, 313, 316, 318.

Under the terms of a co-operative agreement graduate students of Duke University may, with the approval of the chairman of their major department, take any graduate course offered by the Department of Greek and Latin of the University of North Carolina by the payment of a nominal fee. A list of these courses will be sent upon request.

BIOCHEMISTRY AND NUTRITION

PROFESSOR PHILIP HANDLER, DIRECTOR OF GRADUATE STUDIES—237 BELL; PROFESSOR SCHWERT; ASSISTANT PROFESSORS BYRNE AND KAMIN; DRS. FRIDOVICH, GREEN, KIRSHNER, LYNN, AND WHEAT.

M241. GENERAL BIOCHEMISTRY AND NUTRITION.—Three lectures, eight hours of laboratory, two hours of conference per week from November to April. This course is offered primarily for first-year medical students and is not generally recommended for graduate students. Since the laboratory space is limited, graduate students will be admitted only with the permission of the chairman of the department. Prerequisites: chemistry through organic chemistry, and at least one year of college biology. 8 units; 3 units without laboratory work.

ALL MEMBERS OF THE GRADUATE STAFF

M243-244. GENERAL BIOCHEMISTRY.—An introductory but intensive course in the broader aspects of biochemistry. Topics stressed include the chemistry of naturally occurring materials, nature of enzyme action, intermediary metabolism, and chemical aspects of the specialized behavior of mammals, plants and microorganisms. Prerequisites: organic chemistry and at least one year of college biology. 6 units. ALL MEMBERS OF THE GRADUATE STAFF

M246. LABORATORY METHODS IN BIOCHEMISTRY.—A laboratory course emphasizing the procedures and instruments of biochemical research. Each technic is employed in the course of a classical experiment demonstrating an important biochemical finding. This course is designed to accompany Biochemistry M243-244 and may be taken concurrently with M244 during the spring semester or in the following year. Because the experimental materials are labile, one full day per week is spent in the laboratory. 2 units. ASSISTANT PROFESSOR DAVIDSON, AND DR. FRIDOVICH

M310. MICROBIAL PHYSIOLOGY.—A lecture and seminar course devoted to the physiology and comparative biochemistry of microorganisms. (Offered jointly with the Department of Microbiology.) 2 units.

ASSISTANT PROFESSOR PINE; DRS. WHEAT AND GREEN

M343-344. BIOCHEMISTRY OF PROTEINS AND ENZYMES.—A lecture and seminar course devoted to the chemical, physical, and biological properties of proteins and enzymes. In the first semester general aspects of protein chemistry will be considered; in the second semester specific proteins and enzymes will be discussed. Prerequisites: Biochemistry M241 or M243-244 or their equivalent and physical chemistry. 4 units.

M345, 346. SEMINAR.—Required of all graduate students majoring in biochemistry. 2 units. ALL MEMBERS OF THE GRADUATE STAFF

M349-350. INTERMEDIARY METABOLISM.—A seminar course devoted to a study of the detailed mechanisms of carbohydrate, fat and protein metabolism. Prerequisite: Biochemistry M241 or M243-244 or their equivalent. 6 units.

PROFESSOR HANDLER

M351. NUTRITION.—A seminar course in which the chemical and physiological behavior of essential nutritional factors is considered, as well as the nature of

deficiency states. Prerequisite: Biochemistry M241 or M243-244 or their equivalent. Given every third year. 2 units. (Not 1960-61) PROFESSOR HANDLER

M354. BIOCHEMISTRY OF DISEASE.—A lecture and seminar course in the biochemical aspects of the pathogenesis, diagnosis, and therapy of diseases of metabolism. 2 units. (Not 1960-61). PROFESSOR HANDLER

BOTANY

PROFESSOR OOSTING, CHAIRMAN—102A BIOLOGY BUILDING; PROFESSOR KRAMER, DIRECTOR OF GRADUATE STUDIES—04 BIOLOGY BUILDING; PROFESSORS ANDERSON, BILLINGS, HARRAR AND NAYLOR; ASSOCIATE PROFESSORS HUMM, PERRY, AND PHILPOTT; ASSISTANT PROFESSORS CULBERSON, JOHNSON, AND WILBUR

Graduate work in the Department of Botany is offered leading to the A.M. and Ph.D. degrees. Before undertaking graduate study in botany a student should have had in his undergraduate program at least 12 semester hours of botany beyond an elementary course, and related work in biological sciences. Some work in chemistry and physics will be desirable and, for some phases of botanical study, a necessity. The student's graduate program is planned to provide a broad basic training in the various fields of botany, plus intensive specialization in the field of the research problem.

FOR SENIORS AND GRADUATES

202. GENETICS.—The principles of heredity, their cytological basis, and their bearing on other fields of biology. Laboratory work involves experimental breeding of the fruit fly and interpretation of data from the breeding of plants. Offered in alternate years. Prerequisites: one year of botany, zoology, or equivalent, and college algebra. 4 units. (1960-61) ASSOCIATE PROFESSOR PERRY

203. PLANT CYTOLOGY.—A study of the structure and organization of plant cells in relation to growth, reproduction, and especially heredity. Prerequisite: one year of botany. 4 units. (1960-61) PROFESSOR ANDERSON

204. ADVANCED PLANT ANATOMY.—A study of vegetative and reproductive tissue of vascular plants including selection and preparation of fresh plant materials. An analysis of some of the significant literature bearing upon function, development, and phylogeny. Prerequisite: Botany 55 or equivalent. 4 units. (Not 1960-61) ASSISTANT PROFESSOR PHILPOTT

216. BOTANICAL MICROTECHNIQUE.—Methods and theory in preparation of plant tissues for temporary mounts and permanent microscopical slides. Prerequisite: two years of natural science. 4 units. (1960-61) ASSISTANT PROFESSOR PHILPOTT

218. ILLUSTRATIVE TECHNIQUES.—A study of botanical illustrative methods, including theory and use of the microscope, microscopical measurements, drawing, photomicrography, botanical photography, darkroom procedures, lantern slides, and the preparation of illustrative material for publication. Prerequisites: two semesters of botany, zoology or forestry. 2 units. (Not 1960-61) PROFESSOR ANDERSON

221. INTRODUCTORY MYCOLOGY.—Field and laboratory study of the vegetative and reproductive structures of the fungi and slime molds. Methods of collection, isolation, propagation, and identification of the major orders as represented in the local flora. Prerequisite: a year of biological science. 4 units. ASSISTANT PROFESSOR JOHNSON

225-226. SPECIAL PROBLEMS.—Students with adequate training may do special work in the following: (a) Mycology and Plant Pathology, (b) Cytology, (c) Ecology, (d) Genetics, (e) Morphology and Anatomy of Higher Plants, (f) Morphology and Taxonomy of Lower Groups, (g) Physiology, (i) Taxonomy of Higher Groups, (m) Microbiology. Credits to be arranged. ALL MEMBERS OF THE GRADUATE STAFF

252. PLANT METABOLISM.—The physico-chemical processes and conditions underlying the physiological processes of plants. Prerequisite: Botany 151 or equivalent; organic chemistry recommended. 3 units. ASSOCIATE PROFESSOR NAYLOR

254. PLANT WATER RELATIONS.—A study of factors affecting the availability of water, its absorption and use in plants, and the effects of water deficits on plant processes. Assigned readings, reports, and lectures. Prerequisite: Botany 151 or equivalent. 3 units. PROFESSOR KRAMER

255. ADVANCED TAXONOMY.—A study of the historical background of plant taxonomy, modern concepts and systems of classifications, nomenclatorial problems, and the taxonomy of specialized groups. Prerequisite: two years of botany, including Botany 52 or equivalent. 4 units. ASSISTANT PROFESSOR WILBUR

256. COMMUNITY ANALYSIS AND CLASSIFICATION.—The development of concepts and methods in synecology and their present application to the study of plant communities. Prerequisite: Botany 156 or equivalent. 3 units. (1960-61) PROFESSOR OOSTING

257. PRINCIPLES OF PLANT DISTRIBUTION.—Interpretation of the floristic and ecological plant geography of the world's vegetation. Prerequisite: Botany 156 or equivalent. 3 units. (Not 1960-61) ASSOCIATE PROFESSOR BILLINGS

258. PHYSIOLOGY OF GROWTH AND DEVELOPMENT.—Consideration of the internal factors and processes of new protoplasm and its differentiation at the cellular, tissue, and organ level in plants. Prerequisites: Botany 151 or equivalent; organic chemistry recommended. 3 units. ASSOCIATE PROFESSOR NAYLOR

259. ENVIRONMENTAL MEASUREMENTS.—Methods of obtaining and evaluating climatological data for ecological purposes with special attention to instrumentation and microclimate. Prerequisite: Botany 156 or equivalent. 3 units. (1960-61) ASSOCIATE PROFESSOR BILLINGS

305. VEGETATION OF NORTH AMERICA.—Distribution and limits of the major plant communities, a study in ecological plant geography. Prerequisite: Botany 156 or equivalent. 3 units. (Not 1960-61) PROFESSOR OOSTING

310. BRYOPHYTES.—The morphological and systematic characteristics of mosses and liverworts. 2 units (1960-61) PROFESSOR ANDERSON

311. ALGAE.—The morphological and ecological characteristics of the common freshwater and marine species and the principles underlying their classification. Collecting, identification, and the making of permanent microscopical preparations. 2 units. (1960-61) ASSOCIATE PROFESSOR HUMM

359-360. RESEARCH IN BOTANY.—Individual investigation in the various fields of botany. Credits to be arranged

PROFESSORS ANDERSON, HARRAR, KRAMER, AND OOSTING;
ASSOCIATE PROFESSORS BILLINGS, HUMM, NAYLOR, AND PERRY;
ASSISTANT PROFESSORS JOHNSON, PHILPOTT, AND WILBUR; DR. CULBERSON

397-398. GENERAL BOTANICAL SEMINAR.—One hour per week throughout the year. Required of all graduates majoring in botany. 2 units.

ALL MEMBERS OF THE GRADUATE STAFF

FOREST BOTANY

FOR SENIORS AND GRADUATES

223. FOREST PATHOLOGY.—Infectious and non-infectious diseases of forest trees, and related deterioration of forest products. Field and laboratory study of symptoms, etiology, and control. Prerequisites: Botany 1 and 2. 3 units.

ASSISTANT PROFESSOR JOHNSON

253. DENDROLOGY.—Nomenclature, classification, and identification of woody plants with special reference to species indigenous to southeastern United States and other important forest regions of temperate North America. Laboratory and field work. Prerequisite: one year of botany. 3 units. PROFESSOR HARRAR

RELATED COURSES IN OTHER DEPARTMENTS

This related course may be counted toward a major in botany: Forestry 257

CHEMISTRY

PROFESSOR SAYLOR, CHAIRMAN—115 CHEMISTRY BUILDING; PROFESSOR BRADSHER, DIRECTOR OF GRADUATE STUDIES—124 CHEMISTRY BUILDING; PROFESSORS BIGELOW, BROWN, GLOCKLER (VISITING LECTURER), GROSS, HAUSER, HILL, AND HOBBS; ASSOCIATE PROFESSORS KRIGBAUM, STROBEL, AND WILDER; ASSISTANT PROFESSORS POIRIER, QUIN, AND SMITH

In the Department of Chemistry graduate work is offered leading to the A.M. and Ph.D. degrees. Before undertaking a graduate program in chemistry, a student should have taken an undergraduate major in chemistry along with related work in mathematics and physics.

Graduate courses in the department are designed to provide a broad basic training in the fields of inorganic, organic, analytical, and physical chemistry. An important requirement for the Ph.D. degree is the successful completion, under the direction of a member of the staff, of a research program leading to the solution of an original problem. The choice of the research problem, for either the A.M. or the Ph.D. degree, will determine the field of advanced specialization.

FOR SENIORS AND GRADUATES

206. ELEMENTS OF THEORETICAL CHEMISTRY.—A course in the general principles of physical chemistry for students who do not present credit in calculus. Credit is not given for both 206 and 261-262. Three recitations and three laboratory hours. Prerequisites: quantitative analysis, organic chemistry 8 units; physics 8 units, and mathematics 6 units. With the permission of the Director of Graduate Studies, graduate students from other departments may offer other advanced science courses in lieu of some of these prerequisites. 4 units.

PROFESSOR SAYLOR AND ASSISTANT PROFESSOR POIRIER

215. ADVANCED INORGANIC CHEMISTRY.—A study of modern theories of valence and molecular structure and inorganic compounds, particularly the less common types. Prerequisites: Chemistry 261-262, or 206. 3 units.

PROFESSOR HILL

216. NUCLEAR CHEMISTRY.—Types and elementary theory of nuclear reactions and the considerations involved in the use of tracers in chemical studies. Prerequisite: Chemistry 261-262; 262 may be taken concurrently. 2 units. (1960-61)

PROFESSOR HILL

234. CHEMICAL INSTRUMENTATION.—Discussion of physico-chemical principles as applied to instrumental methods of analysis, illustrated by laboratory experiments, with emphasis on methods involving electrical techniques. One lecture and three laboratory hours per week. Prerequisites: quantitative analysis and either 261-262 or 206; either of the latter may be taken concurrently. 2 units.

ASSOCIATE PROFESSOR STROBEL

251. QUALITATIVE ORGANIC ANALYSIS.—Systematic identification of organic compounds, including a study of solubilities and classification reactions. One lecture and three or six laboratory hours per week. Prerequisites: quantitative analysis and 8 units of organic chemistry. 2 or 3 units. PROFESSOR HAUSER

252. ADVANCED ORGANIC PREPARATIONS.—A laboratory course designed to supplement the student's knowledge of fundamental organic processes by a selected group of laboratory exercises accompanied by oral discussions of techniques and theories pertinent to the experiments. Five hours laboratory and lecture, with lectures in alternate weeks. Prerequisites: quantitative analysis and 8 units of organic chemistry. 2 units. PROFESSOR BROWN

261-262. PHYSICAL CHEMISTRY.—Fundamentals of general theoretical chemistry illustrated by selected laboratory experiments. Three recitations and three laboratory hours. Prerequisites: quantitative analysis and 8 units of organic chemistry, physics 8 units, differential and integral calculus. 8 units.

PROFESSOR HOBBS AND ASSISTANT PROFESSOR SMITH

271. INTRODUCTION TO RESEARCH.—Lectures on the use of chemical literature, research methods, recording and publication of results, and other topics. One lecture per week. 1 unit. PROFESSOR BROWN

275, 276. RESEARCH.—The aim of this course is to give instruction in methods used in the investigation of original problems. Individual work and conferences. 2 to 6 units. ALL MEMBERS OF THE GRADUATE STAFF

FOR GRADUATES

303. THERMODYNAMICS.—Fundamental laws of thermodynamics and their applications to chemistry and physics. 3 units. PROFESSOR SAYLOR

304. PHYSICAL CHEMISTRY OF REACTIONS.—The theoretical aspects of reaction kinetics, chemical equilibrium, atomic and molecular forces, and the relation of these to chemical reactions are considered. Prerequisite: Chemistry 261-262. 3 units. ASSISTANT PROFESSOR SMITH

331, 332. SEMINAR IN ANALYTICAL AND INORGANIC CHEMISTRY.—Lectures, oral reports, and discussion on advanced topics and recent advances in the allied fields of analytical and inorganic chemistry. Prerequisites: Chemistry 215, and 233 or 234. 2 units.* PROFESSORS HILL AND SAYLOR

341, 342. ADVANCED ORGANIC CHEMISTRY.—Discussion of the theories of organic chemistry with special reference in the first semester to the mechanism of reactions and in the second semester to the synthesis of some of the more complex compounds such as vitamins, hormones, and alkaloids. Undergraduates are admitted to this course only by permission of the Director of Undergraduate Studies. Prerequisites: 8 units of organic chemistry. 4 units.
PROFESSORS BIGELOW AND HAUSER

350. ORGANIC REACTIONS.—A study of the scope and limitations of the more important types of reactions of organic chemistry from the point of view of their practical use in the synthesis of organic compounds. Prerequisites: Chemistry 251 and 341. 2 units. (1960-61). PROFESSOR BRADSHER

351-352. ADVANCED SYNTHETIC ORGANIC CHEMISTRY.—Recent advances in certain selected fields, such as the mechanism of organic reactions, medicinals, dyes, perfumes, terpenes, and alkaloids, will be discussed. The emphasis will be placed on structure studies and synthetic methods. Lecture or seminar one hour each week. 2 units. PROFESSORS BIGELOW AND HAUSER

354. STEREOCHEMISTRY.—A study of recent advances in the stereochemistry of organic compounds including conformations and stereospecific reactions. The use of spectrophotometric methods for the determination of structure will be discussed. Prerequisites: Chemistry 251 and 341. 2 units. (Not 1960-61)
ASSOCIATE PROFESSOR WILDER

360. POLYMER CHEMISTRY.—A survey of the methods of preparation of high-molecular-weight organic compounds and a study of the properties characteristic of macromolecules in solution and in the solid state. Prerequisite: Chemistry 303. 2 units. ASSOCIATE PROFESSOR KRIGBAUM

363, 364. SPECIAL TOPICS IN PHYSICAL CHEMISTRY.—Various topics in physical chemistry which are of special interest to the staff or students are considered, such as absorption and scattering of light, dielectric phenomena, electrode processes, electrolyte theory, ion exchange, molecular structure and solubility. Seminar. Prerequisites: Chemistry 261-262 and 303. 2 units. (1960-61)
PROFESSORS GLOCKLER, HILL, HOBBS, AND SAYLOR; ASSOCIATE PROFESSORS KRIGBAUM AND STROBEL; ASSISTANT PROFESSORS POIRIER AND SMITH

365-366. CHEMICAL PHYSICS, STATISTICAL THEORY.—General introduction to classical and quantum statistical mechanics and applications to chemical problems including: calculation of thermodynamic functions of gases, liquids and solids; solution theory; reaction velocity; and changes of state. 6 units. (365, Not 1960-61: 366, Fall 1960-61) ASSISTANT PROFESSOR POIRIER

367-368. CHEMICAL PHYSICS, QUANTUM THEORY.—General introduction to the quantum theory of atomic and molecular forces and the structure of matter. 6 units. (367, Spring 1960-61; 368, Not 1960-61) ASSISTANT PROFESSOR POIRIER

373, 374. SEMINAR.—Required of all graduate students in chemistry. One hour a week discussion. 2 units. ALL MEMBERS OF THE GRADUATE STAFF

COMPARATIVE LITERATURE

No graduate degree is offered in Comparative Literature. The following courses may serve in the minor programs of students in other departments. Professor Salinger is Chairman of the Department of German.

201, 202. ROMANTICISM.—Studies in the origin, rise and development of the Romantic Movement in the chief literatures of the Western world. The approach is comparative; the principal emphasis will be on England, France, and Germany with some reference to other countries. Selected subjects will be covered in lectures by speakers from various departments of the University. 6 units. (1960-61)

PROFESSOR SALINGER

203, 204. REALISM AND SYMBOLISM.—Comparative studies in the literatures of England, France, Germany, Russia, the Scandinavian countries, Spain and Italy, tracing the decline of romantic individualism and the reappraisal of man's significance against the social background. Selected subjects will be covered in lectures by speakers from various departments of the University. 6 units. (Not 1960-61)

PROFESSOR SALINGER

ECONOMICS

PROFESSOR DE VYVER, CHAIRMAN—203 SOCIAL SCIENCE; PROFESSOR SPENGLER, DIRECTOR OF GRADUATE STUDIES—322 LIBRARY; PROFESSORS BLACK, CARTTER, HANNA, HOOVER, HUMPHREY, LANDON, RATCHFORD, SIMMONS, AND SMITH; ASSOCIATE PROFESSOR DEWEY; ASSISTANT PROFESSORS FERGUSON AND YOHE

Graduate work in the Department of Economics is offered leading to the A.M. and Ph.D. degrees. To enter upon graduate work in economics a student should have completed with satisfactory grades at least 12 semester hours of undergraduate work in economics, including 6 hours of Principles of Economics. Among the undergraduate courses of distinct advantage to the graduate student specializing in economics are: General Accounting Elementary Statistics, Intermediate Economic Theory, and basic courses in philosophy, psychology, the social sciences other than economics, and mathematics.

The fields from among which students working toward a Ph.D. degree in economics may choose for purposes of concentration are: Economic Theory, History of Economic Thought, Demographic and Economic Growth and Change, Economic History, Economic Systems, Industrial and Organizational Economics, International Trade, Labor Economics, Mathematical and Econometrical Economics, Money and Banking, Public Finance, Statistics and National Income, and (occasionally) especially arranged fields. The requirements for the Ph.D. degree in economics normally include (among other things) completion of the work (or its equivalent) making up the first of these fields, together with four additional fields; courses in several other fields; Economics 237-238, or equivalent work; and two or three courses in minor fields. When circumstances warrant, these requirements are subject to modification. Students electing Statistics and National Income as a field must complete courses in mathematical statistics and probability, or equivalents.

FOR SENIORS AND GRADUATES†

233. STATE AND LOCAL FINANCE.—A study of expenditures, taxation, and financial administration in state and local governments with emphasis on current problems. Special attention will be given to research methods and materials and to the financial relations between state and local governments. 3 units.*†

PROFESSOR RATCHFORD

237-238. STATISTICAL METHODS.—A study of statistical methods appropriate for dealing with problems in business and the social sciences. In addition to developing more thoroughly the subjects considered in *Business Statistics,* the following methods will be considered: multiple, partial, and curvilinear correlation; curve fitting; probability; sampling distributions; and statistical inference. Pre-

requisite: Economics 138 or consent of the instructor. Either semester may be taken for credit. 6 units. PROFESSOR HANNA

240. NATIONAL INCOME.—A critical survey of the conceptual framework and structure of national income and its components, the reliability of national income estimates, and their use in analyzing questions of economic policy. 3 units. (1960-61) PROFESSOR HANNA

243. MATHEMATICAL ECONOMICS.—A systematic survey of mathematical economic theory. The principal topics are: vector spaces and matrices; macrostatics, especially input-output systems; and microstatics, especially models of the firm employing game theory and activity analysis. This course is a continuation of Economics 300. 3 units. ASSISTANT PROFESSOR FERGUSON

244. INTRODUCTION TO ECONOMETRICS.—The implementation of economic theory by statistical testing and estimation. The course is composed of lectures on statistical theory for linear systems and of a workshop in applied econometrics. Data processing and programming for digital computor is studied, and the class participates in solution of a problem by use of computor. 3 units. ASSISTANT PROFESSOR FERGUSON

256. LABOR LEGISLATION AND SOCIAL INSURANCE.—A study of the relations of the state to labor problems with special reference to remedial legislation, to interference in labor disputes, and to social insurance. 3 units. (1961-62)† PROFESSOR DE VYVER

262. TRADE UNIONISM AND COLLECTIVE BARGAINING.—An intensive survey of the trade union as an economic institution is followed by a study of the principles and problems of union-management relationship as found in collective bargaining. 3 units. (1960-61)† PROFESSOR DE VYVER

275-276. ADVANCED INDUSTRIAL ACCOUNTING AND MANAGEMENT.—A comprehensive examination of the rationale and techniques of control methods used in industry. Emphasis is laid on a critical evaluation of the practices followed by job-order, process, and standard costing, as well as the economics of overhead costs. Prerequisites: Economics 171-172 and permission of the Department. 6 units. PROFESSOR BLACK

FOR GRADUATES

300. INTRODUCTORY MATHEMATICAL ECONOMICS.—This course is designed to acquaint the student with mathematical methods of economic analysis, especially difference and differential equations. These tools are applied to macrodynamic models. 3 units. ASSISTANT PROFESSOR FERGUSON

301. ECONOMIC ANALYSIS.—Review of contemporary theory relating to consumer behavior, production, the firm, price formation, income distribution, and equilibrium. 3 units. ASSISTANT PROFESSOR FERGUSON

304, 305. SEMINAR IN MONEY AND BANKING.—3 units each. (1961-62) PROFESSOR SIMMONS

311-312. HISTORY OF POLITICAL ECONOMY.—A detailed review of the development of economics theory, the tools of economic analysis, and economics as a science, together with an analysis of the circumstances affecting this development. Period covered: pre-Christian times through 1936. 6 units. (1961-62) PROFESSOR SPENGLER

313-314. SEMINAR IN ECONOMIC THEORY.—The course consists of directed research in economic theory. The primary purpose is the correction of authoritative eclecticism and its replacement by individually integrated theory. Prerequisite: Economics 301 or its equivalent. 6 units. PROFESSOR HOOVER

315. SEMINAR IN ECONOMIC SYSTEMS.—3 units. (1960-61) PROFESSOR HOOVER

† Graduate students in Economics normally will not receive credit for courses 233, 256, and 262. These courses may be taken for credit by non-Economics graduate students, with the consent of the instructor.

316. SEMINAR IN ECONOMIC FUNCTIONS OF THE STATE.—3 units. (1960-61) Professor Hoover

317. SEMINAR IN DEMOGRAPHIC, POPULATION, AND RESOURCE PROBLEMS.—3 units. (1960-61) Professor Spengler

318. GENERAL SEMINAR IN ECONOMICS.—All graduate students with economics as a major subject are members of this seminar. Reports of progress in research will be made, and there will be lectures and critical discussion by members of the Department. Year course. No credit. All Members of the Graduate Staff

319. SEMINAR IN THE THEORY AND THE PROBLEMS OF ECONOMIC GROWTH AND CHANGE.—3 units. Professor Spengler

320. SEMINAR IN TRADE CYCLE, EMPLOYMENT, AND INCOME THEORY.—3 units. Assistant Professor Yohe

321-322. ECONOMIC WORKSHOP.—6 units. Professors Spengler and Smith

329. FEDERAL FINANCE.—A study of the expenditures, revenues, and financial administration of the government of the United States, with emphasis on current problems. Special attention given to budgetary procedure, corporate and individual income taxes, and the financial relations between federal and state governments. Prerequisite: Economics 187 or consent of instructor. 3 units. (1960-61) Professor Ratchford

330. SEMINAR IN PUBLIC FINANCE.—3 units. (1960-61) Professor Ratchford

331. SEMINAR IN ECONOMIC HISTORY.—3 units (1960-61) Professor Smith

355. SEMINAR IN LABOR ECONOMICS.—3 units. (1960-61) Professor de Vyver

358. SEMINAR IN LABOR MARKET AND RELATED ANALYSIS.—3 units. (1961-62) Professor Cartter

365. SEMINAR IN INTERNATIONAL TRADE.—3 units. (1960-61) Professor Humphrey

386. SEMINAR IN LATIN-AMERICAN ECONOMIC PROBLEMS.—3 units. (1960-61) Professor Smith

389. SEMINAR IN INDUSTRIAL AND GOVERNMENTAL PROBLEMS.—3 units. (1960-61)

401. SEMINAR ON THE BRITISH COMMONWEALTH.—3 units. Professors Spengler, Cole, Hamilton, and Braibanti

Related Courses in Other Departments

Courses comprising a candidate's minor may be selected from fields of forestry, history, mathematics, philosophy, physics, political science, psychology, and sociology and anthropology, or from an area that complements the candidate's area of research interests in economics.

EDUCATION

Professor Cartwright, Chairman—08D West Duke Building; Professor Bolmeier, Director of Graduate Studies—08B West Duke Building; Professors Carr and Hurlburt; Associate Professors Colver, Gehman, Petty, Rudisill, Stumpf, and Weitz; Assistant Professor Dunning

For Seniors and Graduates

Graduate work in Education is offered leading to the A.M., the M.Ed., the M.A.T., and the Ed.D. degrees. For each of these degrees there are specific requirements and prerequisites, all of which may be found stated in detail. Departmental requirements and prerequisites for all of these degrees may be obtained from the Director of Graduate Studies.

(Some courses below are offered only in the Summer Session; see the Summer Session *Bulletin*.)

201. TEACHING AND SUPERVISION OF ARITHMETIC.—This course gives special attention to the number system, the fundamental operations (with whole numbers, fractions, and decimals), percentage, and measurements. The course will consider the meaning theory, method of teaching, problem solving, evaluation, practice and drill, and selection and gradation of arithmetical contents. The course is designed for teachers and supervisors in the elementary school. 3 units.
ASSOCIATE PROFESSOR PETTY

203. PRINCIPLES OF SCHOOL ADMINISTRATION.—The fundamental facts and procedures of school administration, an analysis of the problems and policies of the organization and direction of a local school system, and the functions of the various school officials. 3 units. PROFESSORS BOLMEIER AND HURLBURT AND ASSOCIATE PROFESSOR STUMPF

204. THE SCHOOL AS AN INSTITUTION.—Consideration is given to the place of the school in the American social order, and its adaptation to social, economic, and political changes. Special attention is directed to the responsibility (1) of the school for seeking solutions to the perplexing problems of youth created by a changing society; and (2) of the government for providing greater equality of educational opportunities. 3 units. PROFESSOR BOLMEIER

205. CURRICULUM PROBLEMS IN SECONDARY EDUCATION.—A consideration of the aims and objectives of secondary-school subjects, emphasizing practical problems of curriculum-making in the high school. 3 units.*
PROFESSOR CARTWRIGHT

210. INTRODUCTION TO EDUCATIONAL RESEARCH.—The general purpose of this course is to give the student an overview of research, acquaint him with the nature of research processes, and develop within him an appreciation of the essential characteristics of good research. 3 units. ASSOCIATE PROFESSOR STUMPF

213. ELEMENTARY-SCHOOL ORGANIZATION AND ADMINISTRATION.—This course is designed especially for principals, teachers, and other prospective members of the elementary-school staff. The scope of elementary education is considered to encompass nursery school, kindergarten, and the elementary school. Special treatment is given to the problems of internal organization and management of the elementary school and its integration with the secondary-school level. 3 units.*
ASSOCIATE PROFESSOR STUMPF

215. SECONDARY EDUCATION: PRINCIPLES.—Intensive study of principles, curriculum, and methods in secondary education. Accelerated course meeting six hours a week for half a semester. Must be accompanied by Education 216. 3 units.
PROFESSOR CARTWRIGHT AND HURLBURT;
ASSISTANT PROFESSORS DUNNING AND REYNOLDS

216. SECONDARY EDUCATION: INTERNSHIP.—Supervised internship in junior or senior high schools. Full-time observation and teaching for half a semester, accompanied by Education 215; OR, with permission of the Department, full-time teaching for a semester, accompanied by Education 315. Students carrying Education 216 for credit toward a master's degree will be required to take six hours of senior or graduate work in addition to the normal degree requirements. 6 units. PROFESSORS CARTWRIGHT AND HURLBURT;
ASSISTANT PROFESSORS DUNNING AND REYNOLDS

217. THE PSYCHOLOGICAL PRINCIPLES OF EDUCATION.—An advanced study of teaching, learning, and the learner. Selected problems guiding the reading of students will be discussed in class. 3 units.
ASSOCIATE PROFESSORS GEHMAN AND WEITZ

222. THE CURRICULUM AND MATERIALS OF THE ELEMENTARY GRADES.—A study of curriculum problems in the elementary schools. 3 units.*
PROFESSOR HURLBURT

224. TEACHING THE SOCIAL STUDIES IN ELEMENTARY SCHOOLS.—This course will treat objectives, curriculum trends, methods, and materials in elementary-school social studies. Topics to receive emphasis include unit-planning,

use of the textbook, the reading program, using community resources, audio-visual materials, dealing with controversial issues, teaching time and place concepts, and evaluation. Opportunity will be provided for teachers to work on their own school problems in the social studies. 3 units. PROFESSOR CARTWRIGHT

225. THE TEACHING OF HISTORY AND THE SOCIAL STUDIES.—Evaluation of the objectives, content, materials, and methods in the teaching of history and the social studies. 3 units. PROFESSOR CARTWRIGHT

226. TEACHING READING IN THE ELEMENTARY SCHOOL.—A study of the nature of the reading process and of principles, methods, and materials for the development of effective reading attitudes and skills as applied both to developmental and remedial programs. 3 units. ASSOCIATE PROFESSOR RUDISILL

228. IMPROVEMENT OF INSTRUCTION IN THE SOCIAL STUDIES.—An advanced treatment of curriculum, methods, and materials in the social studies. Individuals will concentrate on subjects and grade levels of their choice. 3 units. PROFESSOR CARTWRIGHT

232. SUPERVISION OF INSTRUCTION.—A survey of supervision as a means of improving instruction and adapting the curriculum to the learner and to community needs. 3 units.* PROFESSOR CARR

234. SECONDARY-SCHOOL ORGANIZATION AND ADMINISTRATION.—This course is designed especially for principals, teachers, and other prospective members of the secondary-school staff. The scope of secondary education is considered to encompass junior high school, regular high school, senior high, and junior college. Special treatment is given to the problems of internal organization and management. 3 units. PROFESSOR BOLMEIER

235. THE NATURE, FUNCTION, AND REORGANIZATION OF THE CURRICULUM.—Selected problems guiding the reading of students. 3 units. PROFESSORS CARR AND CARTWRIGHT

236. TEACHING READING IN THE SECONDARY SCHOOL.—A study of the nature of the reading process and of principles, methods, and materials for the development of effective reading attitudes and skills as applied both to developmental and remedial programs. The course provides practice with secondary-school children suffering reading retardation, including testing, diagnosis, and daily remedial teaching during a six-week period. For secondary-school teachers of all subjects who wish to improve the reading and study habits of their students. 3 units. ASSOCIATE PROFESSOR RUDISILL

237. LITERATURE FOR ADOLESCENTS.—This course offers a critical survey of literature written for, or appropriate for junior and senior high school students. Fiction, non-fiction, biography, poetry, and drama are examined. Both adult and transition-type literature are considered. Methods of organizing the program in literature are explored. 3 units. ASSISTANT PROFESSOR DUNNING

239. METHODS AND PROBLEMS OF TEACHING ENGLISH IN SECONDARY SCHOOLS.—This course will present sound methods of teaching the reading of literature and other forms of writing, language, grammar, and composition. Materials will include selections found in widely adopted textbooks, numerous specimen themes for grading, and current books and articles in the field. Several short compositions and a report will be required. 3 units. ASSOCIATE PROFESSOR BOWMAN AND ASSISTANT PROFESSOR DUNNING

240. EDUCATIONAL AND OCCUPATIONAL INFORMATION.—A study of the sources of occupational and educational information: methods of securing and organizing occupational information; methods of providing vocational and educational information to students through career days, college conferences, class activities, and individual counseling; methods of making job analyses and community occupational surveys. 3 units.* ASSOCIATE PROFESSOR COLVER

241. PRINCIPLES OF GUIDANCE.—An historical survey of the philosophies of guidance; a study of the interrelationships between instruction, administration, and guidance in education. Prerequisite: 6 hours of psychology or educational psychology. 3 units. ASSOCIATE PROFESSOR COLVER

242. MEASUREMENT OF APTITUDES, INTEREST, AND ACHIEVEMENT.—A study of the theories and principles of psychological measurement as applied to aptitude, interest, and achievement testing. Prerequisite: 12 hours of psychology or educational psychology (6 hours of which may be taken concurrently). 3 units.
PROFESSOR KUDER

243. PERSONALITY DYNAMICS.—A study of personality structure and dynamics with emphasis upon the implications for counseling and instruction. Prerequisite: 6 hours of psychology or educational psychology. 3 units.
ASSOCIATE PROFESSOR GEHMAN

244. COUNSELING TECHNIQUES.—A study of individual counseling techniques including diagnosis, interviewing, program planning, and counseling evaluation. Prerequisite: Education 242 and 243 or equivalent, which may be taken concurrently. 3 units. ASSOCIATE PROFESSOR GEHMAN

246. THE TEACHING OF MATHEMATICS.—This course deals with such topics as aims, curriculum, course and lesson planning, and classroom procedure for teaching secondary-school mathematics. 3 units. ASSISTANT PROFESSOR REYNOLDS

248. PRACTICUM IN COUNSELING.—Practice in individual counseling, including test administration, intake interviewing, diagnosis, counseling, program planning, report preparation, and evaluation. The student will be expected to devote about 150 hours to case work and conferences with his supervisor. Prerequisite: Education 244. 3 units. ASSOCIATE PROFESSOR WEITZ

253. SCHOOL LAW.—The primary purpose of this course is to familiarize prospective school administrators and teachers with the legal features of school organization and administration. Although some attention is given to constitutional and statutory provisions, the main emphasis is upon court decisions relating to education. Students are expected to select appropriate problems in school law for intensive study. 3 units. PROFESSOR BOLMEIER

258. EDUCATIONAL MEASUREMENTS.—A critical study of the principles and techniques involved in measurement in education, with opportunity for individual research. Prerequisite: twelve semester hours in the Department, including a course in educational psychology. 3 units. ASSOCIATE PROFESSOR WEITZ

266. SCIENCE IN THE ELEMENTARY SCHOOL.—Presentation of basic concepts in natural and physical science through selected readings, the use of simple experiments and demonstrations, construction and use of equipment, and field studies. 3 units.*

276. THE TEACHING OF HIGH-SCHOOL SCIENCE.—Discussion, lectures and collateral reading, related to such topics as aims, tests, curriculum, classroom and laboratory procedure, field trips, course and lesson planning for secondary-school science. 3 units.

290. ADMINISTRATION OF SCHOOL PROPERTY.—Planning and management of the school plant and its equipment to meet instructional, health, and community needs for immediate and long-range purposes. This course is intended for teachers, principals, and superintendents. Areas to be treated will include site selection; trends in design, lighting, ventilation, and heating; custodial service and maintenance; and financing. 3 units.* ASSOCIATE PROFESSOR STUMPF

FOR GRADUATES

315. SEMINAR IN SECONDARY SCHOOL TEACHING.—Advanced-level consideration of principles, practices, and problems in secondary school instruction. Designed particularly to accompany an internship. For students without previous internship credit, this course must be accompanied by Education 216. 3 units.
PROFESSOR HURLBURT

323. PUBLIC SCHOOL FINANCE.—A study of educational costs, sources of revenue for the support of public education, collection of revenue, basis of distribution, and accounting for funds spent. 3 units.* ASSOCIATE PROFESSOR STUMPF

335-336. SEMINAR IN SCHOOL ADMINISTRATION.—Organization and control over public education. During the first semester special attention is given to "external control" such as is exercised by various branches and levels of government and by professional and lay groups. "Internal control" as this relates to the principal, the teaching staff, and methods of classroom control is considered in the second semester. 6 units each semester. PROFESSORS BOLMEIER, HURLBURT; ASSOCIATE PROFESSORS PETTY AND STUMPF

354. SEMINAR IN SCHOOL LAW. 3 units. PROFESSOR E. C. BOLMEIER

ENGINEERING

CIVIL ENGINEERING

PROFESSOR ROWE, CHAIRMAN AND DIRECTOR OF GRADUATE STUDIES—121 ENGINEERING; PROFESSOR WILLIAMS; ASSOCIATE PROFESSOR GARDNER

The Department of Civil Engineering offers graduate work leading to the Master of Science degree. A broad approach is emphasized and fundamental principles are stressed. Narrowly specialized courses are not offered. Each graduate student therefore engages in a program that is designed to give him technical competence in mathematics, physics, or chemistry, and the civil engineering sciences. A student may concentrate on one of the following fields of civil engineering: hydraulic engineering, soils engineering, or structural engineering.

A minimum prerequisite to the graduate program will be mathematics through linear differential equations, mechanics of materials, structural theory and design, fluid mechanics, and location procedure.

CE 201. THEORETICAL AND APPLIED MECHANICS.—Introduction to the theory of elasticity, vibrations analysis, and hydrodynamics. (Same course as ME 201.) 3 units. PROFESSORS ROWE AND MACDUFF

CE 202. ADVANCED MECHANICS OF MATERIALS AND EXPERIMENTAL STRESS ANALYSIS.—The analysis of stress and strain in deformable bodies, correlation of theory with data from experiment. Photoelasticity. Strain gages. Similitude. 3 units. PROFESSOR ROWE

CE 231. STRUCTURAL THEORY AND ANALYSIS.—The application of the fundamental theories of structural action to the design and analysis of structural members. The Gauss Scheme. Specifications. Planning of CE projects. 3 units. PROFESSOR ROWE

CE 232. REINFORCED CONCRETE THEORY.—Design and analysis of reinforced concrete members including plates and shells. Prestressed and postressed concrete members. 3 units. ASSOCIATE PROFESSOR GARDNER

CE 235. FOUNDATION ENGINEERING.—The theory and application of soil mechanics to the design and analysis of foundations, subsurface structures, and earth works. 3 units. ASSOCIATE PROFESSOR GARDNER

CE 242. HYDRAULIC ENGINEERING.—Fundamental principles of flow, effects of gravity, viscosity, compressibility, and surface tension of fluid motion in closed conduits and open channels; surface and form resistance; hydraulic similitude. Fundamentals of applied hydrology. 3 units. PROFESSOR WILLIAMS

CE 297-298. THESIS RESEARCH.—A student with the proper background may carry on research under the direction of the staff in one of the following fields: foundation engineering; hydraulic engineering, and structural engineering. Thesis credit only. 6 units. ALL MEMBERS OF THE GRADUATE STAFF

ELECTRICAL ENGINEERING

PROFESSOR VAIL, CHAIRMAN AND DIRECTOR OF GRADUATE STUDIES—131 ENGINEERING PROFESSOR MEIER; ASSOCIATE PROFESSORS ARTLEY, OWEN, AND WILSON

The Department of Electrical Engineering offers graduate work leading to the degree of Master of Science. Students may specialize in any of the following fields; dielectric materials; ferromagnetic materials; energy conversion; instrumentation;

high voltage phenomena. The major requirement of 12 units in electrical engineering is normally met by taking courses EE 201 and EE 202, plus two other courses which are so selected as to provide background for the specialized thesis research. The minor requirement of 12 units outside of engineering is normally met by Mathematics 285, 286 and Physics 213, 214.

A minimum prerequisite to the graduate courses in electrical engineering is a basic knowledge of differential equations, electric and magnetic field theory, and the theory of networks.

EE 201. ENERGY SYSTEMS.—Consideration of general concepts of energy storage, transfer, transformation, and control that are applicable to a wide variety of technical systems, with emphasis on their common mathematical structure. Included are electrical, magnetic, mechanical, hydraulic, aerodynamic, and thermal systems. Applications to specific engineering devices and machines. Prerequisite: permission of instructor. 3 units. ASSOCIATE PROFESSOR ARTLEY

EE 202. INFORMATION SYSTEMS.—Consideration of general concepts of information storage, transfer, and processing. Optimum total response of information handling systems, including considerations of stability and dynamic response in the time and frequency domains. Applications to communications networks and devices, including an introduction to computers. Prerequisite: permission of instructor. 3 units. ASSOCIATE PROFESSOR OWEN

EE 211. SOLID STATE ENGINEERING.—An introduction to concepts and engineering applications of solid state physics: crystalline structure and thermal properties of solids; insulators, semiconductors, and conductors; magnetic materials. Prerequisite: permission of instructor. 3 units. PROFESSOR VAIL

EE 222. NONLINEAR ELECTROMAGNETICS.—Analytic approximations for nonlinear characteristics; use of idealized components in the analysis of piecewise-linear systems; approaches applicable when a material such as high-permeability steel possesses characteristics which are different under static and dynamic conditions; applications to devices such as transductors, self-saturating magnetic amplifiers, modulators, ferroresonant circuits, relaxation oscillators and parametric amplifiers. Prerequisite: permission of instructor. 3 units.
ASSOCIATE PROFESSOR WILSON

EE 231. NUCLEAR ENGINEERING.—Review of nuclear physics; fission and the chain reaction; nuclear reactor principles; materials, instrumentation, and control of nuclear reactors; selected applications and techniques of nuclear engineering. Prerequisite: permission of instructor. 3 units. PROFESSOR MEIER

EE 259. ADVANCED ELECTRICAL ENERGY CONVERSION.—Advanced theory of rotating electric machines; direct and quadrature axis components; equivalent circuits; symmetrical components; transients in machine systems. Prerequisite: an advanced course in electric machinery and permission of instructor. 3 units.
PROFESSOR MEIER AND ASSOCIATE PROFESSOR WILSON

EE 265. ADVANCED TOPICS IN COMMUNICATIONS.—Special problems dealing in the design and application of devices and systems in communications engineering. Prerequisite: An advanced course in electronic networks. 3 units.
ASSOCIATE PROFESSOR OWEN

EE 297, 298. THESIS RESEARCH.—A student with the proper background may carry on research under direction of a member of the staff in one of the following fields: dielectric materials; magnetic materials; energy conversion; instrumentation; high voltage phenomena. Thesis credit only. 6 units.
ALL MEMBERS OF THE GRADUATE STAFF

MECHANICAL ENGINEERING

PROFESSOR MACDUFF, CHAIRMAN AND DIRECTOR OF GRADUATE STUDIES—142A ENGINEERING; PROFESSOR KENYON; ASSOCIATE PROFESSORS ELSEVIER, STEPHENSON, AND BOYLE

The Mechanical Engineering Department offers graduate work leading to the degree of Master of Science. It is intended that the work for this degree provide a broad basic foundation in the art of applying science to Mechanical Engineering

design and analysis. The major requirement of 12 units in Mechanical Engineering is normally met by taking courses ME 201 and ME 202, plus two other courses which are so selected as to provide background for the specialized thesis-research. The minor requirements of 12 outside the College of Enginering is normally met by Mathematics 285, 286, and Physics 213, 214.

A minimum prerequisite to the graduate courses in mechanical engineering is a basic knowledge of differential equations, undergraduate thermodynamic theory, kinematics, mechanics, and machine design.

ME 201. THEORETICAL AND APPLIED MECHANICS.—Introduction to the theory of elasticity, vibrations analysis, and hydrodynamics. (This course is the same as CE 201.) 3 units. PROFESSORS MACDUFF AND ROWE

ME 202. THEORETICAL THERMODYNAMICS.—Classical and modern concepts of the conversion of heat and work; the combined First and Second Law; thermo-electricity; super-critical pressure systems; reheat and regenerative processes; binary-vapor systems; introduction to unsteady systems. 3 units.
PROFESSOR KENYON AND ASSOCIATE PROFESSORS ELSEVIER AND STEPHENSON

ME 221. ANALYSIS OF INCOMPRESSIBLE AND COMPRESSIBLE FLUID FLOW.—Flow of incompressible and compressible fluids; boundary layer phenomena for viscous fluids; Mach number concept for sonic and subsonic flow; experimental methods. 3 units.* PROFESSOR KENYON AND ASSOCIATE PROFESSOR BOYLE

ME 222. ANALYSIS OF HEAT TRANSFER.—Heat transfer by conduction, convection, and radiation; lumped and distributed heat capacity, resistance, losses; steady and transient flow. 3 units.*
PROFESSOR KENYON AND ASSOCIATE PROFESSOR STEPHENSON

ME 231-232. SYSTEMS ENGINEERING.—Methods of obtaining parameters for strength, response, and stability studies of mechanical systems; impedance and operational means of analysis; mechanical and electronic analogs; nonlinear theories. 6 units. PROFESSOR MACDUFF

ME 280. NUCLEAR REACTOR POWER CYCLES.—Introduction to basic reactor principles and reactor types; consideration of thermodynamic cycles for nuclear reactors for stationary and mobile plants; analysis of fluid flow and heat transfer problems unique to reactors with development of methods of reactor safety techniques; metallurgical problems peculiar to reactor design. 3 units.*
PROFESSOR KENYON

ME 297, 298. THESIS RESEARCH.—A student with proper background may carry on research under the direction of the staff in one of the following fields: systems engineering; thermodynamics; heat transfer; and fluid flow. Thesis credit only. 6 units. ALL MEMBERS OF THE GRADUATE STAFF

ENGLISH

PROFESSOR TURNER, CHAIRMAN—325 ALLEN BUILDING; PROFESSOR BOYCE, DIRECTOR OF GRADUATE STUDIES—401 ALLEN BUILDING; PROFESSORS BEVINGTON, BRINKLEY, FENTON, FISHER, GOHDES, SANDERS, STEVENSON, AND WARD; ASSOCIATE PROFESSOR BRYANT; ASSISTANT PROFESSORS BUDD, FERGUSON, HENINGER AND SMITH

The department offers graduate work leading to the A.M. and Ph.D. degrees. A statement of the requirements for the Ph.D. degree may be obtained from the Director of Graduate Studies.

FOR SENIORS AND GRADUATES

203. CHAUCER.—Reading and interpretation of the minor poems, *Troilus*, and *The Canterbury Tales*. 3 units. PROFESSOR FISHER

207-208. HISTORY OF THE ENGLISH LANGUAGE.—A survey of the language from Old to Present English, taking into consideration developments in phonology, morphology, syntax, and vocabulary. 6 units. PROFESSOR FISHER

215, 216. ELIZABETHAN DRAMA.—Careful study of one or two major dramatists (Jonson or Beaumont and Fletcher) and extensive reading in the other writers (Heywood, Ford, Massinger, Marlowe, Middleton) with emphasis on the nature and qualities of their work in relation to its historical background. 6 units.

217. MILTON.—Milton's poetry and prose, with emphasis on the major poems. 3 units. (1960-61) PROFESSOR BRINKLEY

218. SPENSER.—A study of his works. 3 units. (Not 1960-61)
ASSISTANT PROFESSOR HENINGER

219, 220. THE EIGHTEENTH CENTURY.—Swift, Pope, Defoe, Addison, Steele, and others are studied in the first semester; in the second, Gray, Johnson, Boswell, Collins, Goldsmith, the novelists, and other writers. 6 units.
PROFESSOR BOYCE, ASSISTANT PROFESSOR FERGUSON

221, 222. ENGLISH LITERATURE OF THE EARLY NINETEENTH CENTURY.—The Romantic poets and prose writers from Scott to the early Carlyle, with special attention to Wordsworth, Coleridge, and Keats. 6 units.
PROFESSORS SANDERS, STEVENSON

223, 224. ENGLISH LITERATURE OF THE LATER NINETEENTH CENTURY.—The first semester is devoted chiefly to Carlyle, Dickens, Thackeray, Tennyson, and Browning; the second semester to Arnold, Ruskin, Pater, George Eliot, Meredith, the Pre-Raphaelites, and Swinburne. 6 units.
PROFESSORS BEVINGTON, SANDERS, STEVENSON

229, 230. AMERICAN LITERATURE, 1800-1865.—The writers emphasized in the first semester are Emerson, Thoreau, and Hawthorne; in the second semester, Poe and Melville. 6 units. PROFESSOR TURNER, ASSISTANT PROFESSOR BUDD

233, 234. AMERICAN LITERATURE, 1865-1920.—Selected works of representative authors of the period. The first semester will include Whitman, Lanier, Mark Twain, James, Howells, Emily Dickinson, Henry Adams, and the Local Colorists; the second semester, Crane, Norris, Moody, London, Dreiser, Edith Wharton, Willa Cather, O'Neill, Robinson, and Frost. The lectures will deal primarily with literary trends as shaped by the social background. 6 units. PROFESSORS FENTON, GOHDES

235, 236. AMERICAN LITERATURE SINCE 1920.—The first semester will include Sherwood Anderson, Mencken, Lewis, Lardner, Gertrude Stein, Pound, Eliot, E. E. Cummings, Hemingway, Faulkner, and Fitzgerald; the second semester, Dos Passos, Farrell, Steinbeck, Wolfe, MacLeish, Stephen Vincent Benet, Richard Wright, and more recent writers. 6 units. PROFESSOR FENTON

237. ENGLISH DRAMA, 1642-1800.—The heroic play and the comedy of manners of the Restoration; the important plays, serious and comic, of the eighteenth century. 3 units. (Not 1960-61) PROFESSOR WARD

239. SHAKESPEARE.—The plays and poems. 3 units.
ASSOCIATE PROFESSOR BRYANT

251, 252. ENGLISH LITERATURE OF THE SEVENTEENTH CENTURY.—Major works in prose, poetry, and drama from 1600 to the death of Dryden. 6 units.
PROFESSOR WARD

262. ENGLISH LITERATURE OF THE EARLY TWENTIETH CENTURY.—Representative work of leading writers from 1900 to 1930, in fiction, drama, poetry, and essay. Critical analysis of selected specimens, and discussion of types, themes, and trends. 3 units. (1960-61) ASSISTANT PROFESSOR SMITH

269, 270. SOUTHERN LITERATURE.—The principal authors and the chief literary development from the beginning to the present. Emphasis in the first semester is on Byrd, Kennedy, Simms, Poe, Timrod, and the humorists; in the second on Lanier, Harris, Cable, Mark Twain, Ellen Glasgow, and Faulkner. Attention is given to the historical and cultural background and to literary relations extending outside the region. 6 units. (Not 1960-61) PROFESSOR TURNER

274. AMERICAN HUMOR.—The development of the native tradition in the Down-East humorists and the humorists of the Old Southwest. Extensive reading in Mark Twain and his contemporaries, and some attention to the continuation of the tradition after Mark Twain. 3 units. (Not 1960-61) PROFESSOR TURNER

FOR GRADUATES

304. STUDIES IN THE METAPHYSICAL POETS.—A careful study of Donne, Herbert, and Vaughan against the seventeenth century background, with some attention to their influence on other writers in the period and their impact on twentieth-century poetry. 3 units. (Not 1960-61) PROFESSOR BRINKLEY

311. BEOWULF.—Reading and interpretation of the text. 3 units. (Not 1960-61) PROFESSOR FISHER

315. FOURTEENTH-CENTURY ENGLISH LITERATURE.—Reading and interpretation of the texts of the literature from 1300 to 1400, exclusive of Chaucer. Emphasis on Wyclif, Gower, the *Pearl* Poet, *Piers Plowman*. 3 units. (1960-61) PROFESSOR FISHER

316. FIFTEENTH-CENTURY ENGLISH LITERATURE.—Reading and interpretation of the texts of the literature from 1400 to 1500, especially Lydgate, the Scottish Chaucerians, Malory, the Middle English drama, carols. 3 units. (Not 1960-61) PROFESSOR FISHER

331. EMERSON.—A study of Emerson's ideas as reflected in selected examples of his essays and poems. 3 units. (1960-61) PROFESSOR GOHDES

332. WHITMAN.—A detailed study of *Leaves of Grass* and of selected prose works. 3 units. (Not 1960-61) PROFESSOR GOHDES

333. HAWTHORNE AND MELVILLE.—Extensive reading in the works of Hawthorne and Melville, and close study of selected writings. 3 units. (1960-61) PROFESSOR TURNER

345. THE EIGHTEENTH-CENTURY NOVEL.—Richardson, Fielding, Smollett, and Sterne are emphasized. Attention is given to earlier prose fiction and to other contributing literary patterns. 3 units. (1960-61) PROFESSOR BOYCE

347. STUDIES IN VICTORIAN POETRY.—Analysis of themes, forms, and sources in the works of Tennyson, Browning, Arnold, Rossetti, Swinburne, Meredith, Hardy, and Hopkins. 3 units. (Not 1960-61) PROFESSOR STEVENSON

348. STUDIES IN VICTORIAN FICTION.—Techniques and principal types of material in the novels of Dickens, Thackeray, Trollope, Eliot, Meredith, and Hardy. 3 units. (Not 1960-61) PROFESSOR STEVENSON

351, 352. INTRODUCTION TO RESEARCH.—6 units.
ALL MEMBERS OF GRADUATE STAFF

378. SEMINAR: Samuel Johnson's Literary Criticism and Related Topics. 3 units. (Not 1960-61) PROFESSOR BOYCE

FORESTRY

PROFESSOR HARRAR, CHAIRMAN AND DIRECTOR OF GRADUATE STUDIES—308 SOCIAL SCIENCE BUILDING; PROFESSORS ANDERSON, KRAMER, NAYLOR AND SCHUMACHER; ASSOCIATE PROFESSORS RALSTON AND YOHO; ASSISTANT PROFESSORS JOHNSON, SULLIVAN AND WOODS

Major and minor work is offered in the scientific aspects of forestry leading to the Master of Arts and Doctor of Philosophy degrees. Work for these degrees may be pursued only in forest-tree physiology, wood anatomy and properties, forest pathology, silvics, forest soils, forest mensuration, forest entomology, and forest economics. College graduates who have had specialized training in botany or soil science and in allied basic subjects, such as physics, chemistry, geology, and zoology, may pursue graduate study and research only in the specialized fields for which their previous work has qualified them. Students who do not have previous training in forestry will be required to complete a minimum of thirty semester hours of approved work in forestry as a preliminary requirement to advanced study for the A.M. and Ph.D. degrees. The holders of these degrees will not be regarded as professionally trained foresters. For information on professional training in forestry, see *Bulletin of the School of Forestry*. For detailed information concerning admission to the Graduate School and for regulations governing candidacy for the A.M.

and Ph.D. degrees and for other regulations, consult the proper pages in this *Bulletin*.

FOR SENIORS AND GRADUATES

223. FOREST PATHOLOGY.—Infectious and non-infectious diseases of forest trees, and related deterioration of forest products. Field and laboratory study of symptoms, etiology, and control. Prerequisites: Botany 1 and 2, or equivalent. 3 units. ASSISTANT PROFESSOR JOHNSON

231. FOREST ENTOMOLOGY.—Morphology, general classification, life histories, and control of insects injurious to forest trees, logs, and lumber. 3 units. PROFESSOR ANDERSON

241. DENDROLOGY.—Nomenclature, classification, and identification of woody plants with special reference to species indigenous to southeastern United States and other important forest regions of temperate North America. Laboratory and field work. Prerequisite: one year of biology. 3 units. PROFESSOR HARRAR

243. SILVICS.—Ecological foundations of silviculture with special reference to forest site factors; influence of forests on their environment; growth and development of trees and stands; origin, development, and classification of forest communities; methods of studying forest environments. Desirable prerequisites: plant physiology, plant ecology, and Forestry 261, or equivalent. 3 units. ASSISTANT PROFESSOR WOODS

251. SAMPLING METHODS IN FORESTRY.—Statistical background for solution of sampling problems with special reference to sample inventory of a forest property. Offered both semesters. Prerequisite: Forestry S151. 3 units. PROFESSOR SCHUMACHER

257. DESIGN OF FORESTRY EXPERIMENTS AND ANALYSIS OF DATA.—Role of experimental design in field and laboratory, and statistical analysis of data as aspects of scientific method in forest research. 5 units. PROFESSOR SCHUMACHER

261. FOREST SOILS.—Origin, development, and classification of soils with special emphasis on those developed in humid climates; morphological, physical, and chemical properties of soils in relation to growth of trees; effect of forests on soils. Prerequisites: Chemistry 1 and 2, and Physics 1, or equivalents; physical geology, mineralogy, petrology, and analytical chemistry are also desirable. 3 units. ASSOCIATE PROFESSOR RALSTON

271. ECONOMICS OF FORESTRY.—Principles of economics used in the analysis of factors affecting the supply of forest products, pricing of stumpage and primary forest products, factors affecting the demand for forest products, economic characteristics and problems of the major forest products industries, analysis of such specific private forestry problems as marketing, forest ownership pattern, taxation, credit, risk, and economic fluctuations. Prerequisite: at least one course in the principles of economics. 3 units. ASSOCIATE PROFESSOR YOHO

276. FORESTRY POLICY.—Objective study and analysis of the development of public land and forestry policies in the United States, present policies of public and private forestry organizations, and current policy issues in the light of economic and other criteria. 2 units. ASSOCIATE PROFESSOR YOHO

290. WOOD ANATOMY.—Study of the physical features and the gross and minute structural characteristics of wood leading to the identification of the commercial woods of the United States, and the important tropical woods used in American wood-working industries. Elementary microtechnique. Prerequisite: one year of biology, Forestry 241 or equivalent. 3 units. PROFESSOR HARRAR

FOR GRADUATES

352. ANALYSES OF FOREST MEASUREMENTS.—Empirical equation and curve fitting appropriate for construction of timber yield tables, tree volume and taper tables; significance tests and graphical solution of equations. Assignments require operation of calculating machines. Prerequisite: Forestry 251. 3 units. PROFESSOR SCHUMACHER

357, 358. RESEARCH IN FORESTRY.—Credits to be arranged. Students who have had adequate training may do research under direction of members of the Faculty in the following branches of forestry:

a. SILVICS.—Prerequisites: Forestry 241, 243, and 244, or equivalents.
ASSISTANT PROFESSOR WOODS

b. FOREST SOILS.—Prerequisite: Forestry 261 or equivalent.
ASSOCIATE PROFESSOR RALSTON

e. FOREST ECONOMICS.—Prerequisite: Forestry 277 or equivalent.
ASSOCIATE PROFESSOR YOHO

f. PROPERTIES OF WOOD.—Prerequisites: Forestry 259 and 260, or equivalents. PROFESSOR HARRAR, AND ASSISTANT PROFESSOR SULLIVAN

g. FOREST MENSURATION.—Prerequisites: Forestry S151, 259, and 352, or equivalents. PROFESSOR SCHUMACHER

h. FOREST ENTOMOLOGY.—Prerequisite: Forestry 230 or equivalent.
PROFESSOR ANDERSON

k. PHYSIOLOGY OF FOREST TREES.—Prerequisites: Plant physiology and plant ecology or silvics. PROFESSOR KRAMER

l. FOREST PATHOLOGY.—Prerequisites: Plant physiology and Forestry 223 or equivalent. ASSISTANT PROFESSOR JOHNSON

362. FOREST SOIL PHYSICS.—Analysis of the physical properties of soil related to the significance of soil moisture, temperature, aeration, and structural characteristics in the analysis of forest growth relationships. Prerequisite: Forestry 261. 3 units. (1960-61) ASSOCIATE PROFESSOR RALSTON

366. FOREST SOIL FERTILITY.—The relationships of soil fertility factors in the growth of forest trees. Emphasis is placed on the analysis of soil factors related to the mineral nutrition of trees. Prerequisites: Forestry 261 with analytical chemistry recommended. 3 units. (Not 1960-61) ASSOCIATE PROFESSOR RALSTON

378. SEMINAR IN FOREST ECONOMICS.—Examination and discussion of the application of economic concepts in forestry, the potential contribution of economic analysis to private and public forest management; current research in forest economics. Prerequisite: Forestry 270 or equivalent; courses in economic theory are desirable. 2 units. ASSOCIATE PROFESSOR YOHO

396. CHEMISTRY OF WOOD.—A study of the chemical constituents of wood including cellulose and its derivatives, lignin and the lignin-cellulose bond, the hemicelluloses, and the extractives; hydrogenation and hydrolysis of wood; cell wall chemistry. Prerequisites: Forestry 290 or equivalent, one course in college physics; organic chemistry desirable. 2 s.h. (w) ASSISTANT PROFESSOR SULLIVAN

397. TIMBER PHYSICS.—The physical properties of wood in relation to electricity, heat, light, moisture, and sound; the mechanical properties of wood; influence of site, growth, and anatomy upon strength and quality of wood; standard timber testing procedures. Prerequisites: Forestry 290 or equivalent, one course in college physics, mathematics through calculus desirable. 2 s.h. (w)
ASSISTANT PROFESSOR SULLIVAN

GERMANIC LANGUAGES AND LITERATURE

PROFESSOR SALINGER, CHAIRMAN AND DIRECTOR OF GRADUATE STUDIES—301C GRAY; ASSOCIATE PROFESSOR SCHOOLFIELD; ASSISTANT PROFESSOR BEARE

The Department of German offers graduate work leading to the A.M. degree. Students who expect to major in German should have had sufficient undergraduate courses in Germanic languages to enable them to proceed to more advanced work.

Students who wish to take courses in German for a minor should normally have completed a third-year course (in exceptional cases, a second-year) of college German with acceptable grades.

201, 202. GOETHE.—A study of his life and works, in the light of his lasting significance to world literature. 6 units. (1960-61) PROFESSOR SALINGER

203, 204. EIGHTEENTH CENTURY.—Eighteenth-century German literature in its relation to contemporary European philosophy. 6 units.*
PROFESSOR SALINGER

205, 206. MIDDLE HIGH GERMAN.—The language and literature of Germany's first classical period. 6 units.*

207, 208. GERMAN ROMANTICISM.—The course covers the entire field of German Romanticism from 1800 to 1850. 6 units. (Not 1960-61)
ASSOCIATE PROFESSOR SCHOOLFIELD

209, 210. KLEIST, GRILLPARZER, AND HEBBEL.—The development of the drama in Germany and Austria between Schiller and naturalism. 6 units. (Not 1960-61)
PROFESSOR SALINGER

211, 212. HEINRICH HEINE.—A study of the German poet and his immediate successors in the movement known as *Jungdeutschland*. 6 units. (Not 1960-61)
PROFESSOR SALINGER

213. LITERATURE OF THE EMPIRES, 1866-1918.—German and Austrian authors of the period with emphasis on Raabe, Fontane, von Saar, Hauptmann, the early works of Thomas and Heinrich Mann, the early Hesse and Rilke. 3 units.
ASSOCIATE PROFESSOR SCHOOLFIELD

214. GERMAN LITERATURE SINCE 1918.—Special emphasis on Thomas Mann, Broch, Doderer and the novel since 1920, the drama from Hofmannsthal to Brecht, the poetry of George, the later Rilke and Benn. 3 units.
ASSOCIATE PROFESSOR SCHOOLFIELD

215. SEVENTEENTH-CENTURY LITERATURE.—A study of the leading writers of the Baroque, seen against the background of their time. 3 units.
ASSISTANT PROFESSOR BEARE

—. GRADUATE READING COURSE. An intensive course in German to develop rapidly the ability to read German in several fields. Graduate students only. No credit.

RELATED COURSES IN OTHER DEPARTMENTS

The following courses in other departments are recommended to students who are majoring in Germanics, as particularly valuable in building a proper background for Germanic studies:

(a) Graduate courses in literature or philology, offered by the ancient and modern language departments, to be selected after consultation with the Germanic Department.

(b) Graduate courses in history and philosophy, offered by those departments, to be selected after consultation with the Germanic Department.

HISTORY

PROFESSOR ALDEN, CHAIRMAN—235 ALLEN; PROFESSOR PARKER, DIRECTOR OF GRADUATE STUDIES—232 ALLEN; PROFESSORS CLYDE, CURTISS, HAMILTON, LANNING, MANCHESTER, ROPP, AND WOODY; ASSOCIATE PROFESSORS ACOMB, COLTON, FERGUSON, HOLLEY, NELSON, AND WATSON; ASSISTANT PROFESSOR DURDEN

A student who intends to work for an A.M. degree in history must present a total of eighteen semester hours of credit for undergraduate courses in history, of which six hours must be in American history if he plans to take his major in that field.

A candidate for the degree of Doctor of Philosophy in history is required to prepare himself in four fields of history, one of which must be in American history and another in the history of Western Europe. The choice and delimitation of fields is determined in consultation with his supervisor and the Director of Graduate Studies. The Department offers graduate instruction in the following fields; Western Europe; American history; Great Britain and the Commonwealth; Latin America; American foreign relations; the Far East in the modern period; Russia; military history.

Students may receive credit for either semester of a hyphenated course without taking the other semester if they obtain written permission from the instructor and the Director of Graduate Studies.

FOR SENIORS AND GRADUATES

203-204. THE UNITED STATES, 1850-1900.—The rise of sectionalism, secession, wartime problems of the Union and Confederacy, political and economic adjustments of Reconstruction, the status of the Negro, the New South, problems of capital and labor, the agrarian revolt, political parties and reform. 6 units. (Not 1960-61) PROFESSOR WOODY

209-210. CONSTITUTIONAL HISTORY OF THE UNITED STATES, 1760 TO THE PRESENT.—A study of the basic problems in forming the Constitution; of its development through the major crises in the history of the United States: of the effects of changing social, cultural, economic, and political conditions on the Constitution. 6 units.

212. RECENT INTERPRETATIONS OF UNITED STATES HISTORY.—A course designed to encourage a critical evaluation of major issues in United States history through examination of recent interpretations of key problems. 3 units. ASSOCIATE PROFESSOR WATSON

213-214. THE OLD SOUTH.—Political thought and party trends from Jefferson to Calhoun; agriculture, slavery, expansion; commerce, manufacturing, transportation; urban life, religion, education; the rise of Southern nationalism. 6 units. (Not 1960-61) PROFESSOR WOODY

215-216. FOREIGN POLICY AND DIPLOMACY OF THE UNITED STATES.—The work in the first semester, covering the period 1775-1877, deals with such topics as the origins and evolution of basic foreign policies; isolation from Europe; paramount interests in Latin America, including the Monroe Doctrine; international co-operation in the Far East. The work in the second semester, covering the period since 1877, deals with such topics as the rise of the new Manifest Destiny; beginnings of American imperialism in Latin America and the Far East; the failure of traditional neutrality in the first World War; postwar conflicts between isolation and collective security; involvement in the second World War. 6 units. (Not 1960-61) PROFESSOR CLYDE

217, 218. EUROPE SINCE 1870.—International relations since the Franco-German War is the chief subject of study in this course; special emphasis is placed upon the underlying economic and political influences. 6 units.

221-222. THE AGE OF THE RENAISSANCE.—The decline of characteristic features of medieval civilization and the rise of modern European institutions with particular attention to intellectual movements from Dante to Erasmus. 6 units. (1960-61) ASSOCIATE PROFESSOR NELSON

223-224. THE OLD REGIME AND THE FRENCH REVOLUTION, 1661-1815. A Study of social, political, and intellectual revolutions in continental Europe, centering on France and giving special attention to successive interpretations of historical change. 6 units. ASSOCIATE PROFESSOR ACOMB

225-226. THE AGE OF THE REFORMATION.—A survey of European civilization from 1500 through the Peace of Westphalia. 6 units. (Not 1960-61) ASSOCIATE PROFESSOR NELSON

227, 228. EUROPE IN THE NINETEENTH CENTURY.—A study, beginning with the career of Napoleon Bonaparte, of the forces and personalities influential in the nineteenth century. Emphasis in the first semester is on the problems of the biographer; in the second, on those of a student of national communities. 6 units. (Not 1960-61) PROFESSOR PARKER

229. RECENT INTERPRETATIONS OF MODERN EUROPERN HISTORY.—A course designed to develop the ability to appraise critical historical issues through the study and discussion of recent interpretations of key historical problems in Modern European History. 3 units. PROFESSOR PARKER

231-232. THE HISPANIC COLONIES AND REPUBLICS IN AMERICA.—The development of the Iberian states as colonizing powers, the conquest of America, the Spanish treatment of the Indian, the contest between Spain and other European nations over America, the independence movement, the struggle for stable government, the rise of liberalism with special emphasis upon Mexico from the Revolution of 1910 to the present, and basic inter-American developments. 6 units. (1960-61)
PROFESSOR LANNING

233-234. THE INSTITUTIONAL, CULTURAL, AND SOCIAL HISTORY OF HISPANIC AMERICA.—The first semester of this course deals with subject races, the development of mixed breeds, the governmental system, the Church and the Inquisition, and Spanish culture with emphasis upon university subjects. In the second semester the work deals with the political ideas of the wars of independence, revolution and dictatorship, the rise of public education, public health, land reform, and proletarian movements. 6 units. (Not 1960-61) PROFESSOR LANNING

235, 236. EUROPEAN EXPANSION OVERSEAS.—In the first semester attention is given to the age of discovery and to the origin and development of the great European overseas empires with special emphasis on the role of the Portuguese in India and the Americas. The work of the second semester deals with the decline of the mercantile empires, the emergence of independent centers of European culture overseas (Brazil being taken as one example), and the revival of mercantile imperialism in the late nineteenth and the twentieth centuries. 6 units.
PROFESSOR MANCHESTER

241-242. THE FAR EAST.—The history of the Western impact on Eastern Asia in the 19th and 20th centuries. Emphasis is placed on such matters as commercial and colonial expansion, the opening of China and Japan, the development by the Western Powers and Japan of colonial, imperialistic, and nationalistic interests, and the rise of Communist power in Asia. 6 units. PROFESSOR CLYDE

243-244. THE UNITED STATES AND THE FAR EAST.—An historical analysis of American relations with the peoples of Eastern Asia during the 19th and 20th centuries. 6 units. PROFESSOR CLYDE

245-246. WAR IN THE MODERN WORLD.—This course is concerned with the relations between warfare and modern political, economic and social conditions. Special attention is given to the development of British and American military methods and to the events of the American Civil War and the two World Wars. The work in the first semester deals with Clausewitz's theories of warfare and the period from the introduction of gunpowder to 1871; in the second semester there is a more detailed analysis of recent land, sea, and air warfare. 6 units.
PROFESSOR ROPP

249-250. SOCIAL AND INTELLECTUAL HISTORY OF THE UNITED STATES.—Evolution of American society and thought to the present; lectures and class discussions seek to illuminate the interplay of ideas and social practice by the examination of attitudes and institutions in such fields as science and technology, law, learning, and religion. 6 units. ASSOCIATE PROFESSOR HOLLEY

251-252. RECENT EUROPEAN HISTORY.—A history of the political and economic developments in Europe since 1870. 6 units. ASSOCIATE PROFESSOR COLTON

257. SOCIAL AND CULTURAL HISTORY OF THE HELLENISTIC WORLD FROM ALEXANDER TO AUGUSTUS.—Lectures, readings, and discussions. This course will not be separately credited without the sequel, 258. 3 units.
PROFESSOR ROGERS

258. SOCIAL AND CULTURIAL HISTORY OF THE GRAECO-ROMAN WORLD.—The Roman Empire as the trustee of Hellenism and Christianity, and its own original contributions to modern civilization; lectures, readings, and discussions. This course continues 257 and will not be separately credited. 3 units.
PROFESSOR ROGERS

259-260. THE EMERGENCE OF THE NEW SOUTH, 1865 TO THE PRESENT.—Reconstruction, industrialization, and agrarian revolt; changing status of

the Negro; the South's role in the reform movements headed by Theodore Roosevelt, Woodrow Wilson, and Franklin D. Roosevelt. 6 units.
ASSISTANT PROFESSOR DURDEN

261-262. RUSSIA IN THE TWENTIETH CENTURY.—A study of the background of the Revolution of 1917 followed by an analysis of the history and policies of the Soviet state. 6 units. PROFESSOR CURTISS

263-264. AMERICAN COLONIAL HISTORY AND THE REVOLUTION, 1607-1789.—The founding and institutional development of the English colonies: the background, progress, and results of the Revolution. 6 units. PROFESSOR ALDEN

267, 268. ENGLAND FROM EDWARD III TO ANNE.—The transition from medieval to modern England, the English Renaissance, and the political, social, and intellectual problems of the seventeenth century. 6 units.
ASSOCIATE PROFESSOR FERGUSON

269. BRITISH HISTORY FROM 1714 to 1867.—The interrelationship of the leadership of such men as Walpole, Chatham, Pitt, and Peel with war, revolution, and social institutions; the rise of the cabinet system; the Industrial Revolution; imperial changes; and reform. 3 units. PROFESSOR HAMILTON

270. GREAT BRITAIN AND THE COMMONWEALTH OF NATIONS, 1867 TO THE PRESENT.—A history of Great Britain at the height of her world dominance and beyond, her oceanic empire, and the evolution of that empire into a unique world-wide Commonwealth of Nations. 3 units. PROFESSOR HAMILTON

FOR GRADUATES

303-304. THE UNITED STATES IN THE TWENTIETH CENTURY.—The emergence of the United States as a major power; attention is focused on domestic developments and conflicting theories of expansion and federal power. Emphasis in the first semester is on the progressive era and the first World War; the second semester is devoted to the twenties and to the Franklin Roosevelt administration. 6 units. ASSOCIATE PROFESSOR WATSON

305-306. SEMINAR IN THE HISTORY OF ENGLAND AND THE BRITISH EMPIRE.—The work consists of practical training in the methods of historical research based on sources for modern British history. 6 units. PROFESSOR HAMILTON

309-310. SEMINAR IN AMERICAN COLONIAL AND REVOLUTIONARY HISTORY.—6 units. PROFESSOR ALDEN

315-316. SEMINAR IN SOUTHERN HISTORY.—Year course. 6 units. (Not 1960-61) PROFESSOR WOODY

317-318. SEMINAR IN MODERN EUROPEAN HISTORY.— 6 units.
ASSOCIATE PROFESSOR COLTON

321-322. SEMINAR IN THE HISTORY OF SPAIN, HISPANIC AMERICA, AND INTER-AMERICAN RELATIONS.—6 units. PROFESSOR LANNING

343-344. SEMINAR IN THE HISTORY OF AMERICAN FOREIGN RELATIONS AND THE FAR EAST.—Particular attention is given to a critical examination of the bibliography of the field. 6 units. PROFESSOR CLYDE

401. SEMINAR ON THE BRITISH COMMONWEALTH.—3 units.
PROFESSORS COLE, HAMILTON, AND SPENGLER

HISTORIOGRAPHY AND THE TEACHING OF HISTORY

FOR GRADUATES

312. SEMINAR IN THE TEACHING OF HISTORY IN COLLEGE.—The work in this course is intended to acquaint students with the problems involved in teaching history in college. It includes critical observation of the teaching by members of the History staff in Duke University. Year course. 2 units.
PROFESSORS MANCHESTER AND HAMILTON

This course is required of all candidates for the degree of Doctor of Philosophy who are in residence as many as two years at Duke University.

320. HISTORIOGRAPHY.—A critical study of the process of finding, appraising, and interpreting the sources of history and of the presentation of the results in narrative. Works of important historians from Herodotus to the present are analyzed. The student undertakes specific exercises in research, criticism, and narration. There is consideration of such general topics as schools, theories, philosophies, and the function of history. Year course. 4 units.

ASSOCIATE PROFESSOR NELSON

This course is required of all candidates for the degree of Doctor of Philosophy who are in residence as many as two years at Duke University.

MATHEMATICS

PROFESSOR GERGEN, CHAIRMAN—134 PHYSICS BUILDING; PROFESSOR ROBERTS, DIRECTOR OF GRADUATE STUDIES—230 PHYSICS BUILDING; PROFESSORS CARLITZ, DRESSEL, ELLIOTT, AND THOMAS; VISITING PROFESSOR SNEDDON; ASSISTANT PROFESSORS GALLIE, MCLEOD, SHOENFIELD, AND WARNER; VISITING ASSISTANT PROFESSOR SCHMIDT

Graduate work in the Department of Mathematics is offered leading to the A.M. and Ph.D. degrees. The student, in his undergraduate work, must have had courses in differential and integral calculus, and at least 6 semester hours of other courses in mathematics on the junior or senior level.

The A.M. degree with a major in mathematics is awarded primarily on the basis of scholarship. Of the 24 units of course work required for this degree, 18 units must be taken in the Department of Mathematics.

The Ph.D. degree in mathematics is awarded upon the demonstration of ability and training in research. The original dissertation, therefore, becomes the most important of the formal requirements for this degree.

Because of the important literature of mathematics written in German and French, the student must have a practical reading knowledge of these languages near the beginning of his graduate study.

FOR SENIORS AND GRADUATES

205. ALGEBRA FROM AN ADVANCED STANDPOINT.—This course is designed for teachers of secondary school mathematics. Topics considered are real and complex numbers, elementary number theory, scales of notation, Diophantine problems, continued fractions, summation of series, binomial theorem, interest and annuities. 3 units. (Retired Officers Program only.) PROFESSOR THOMAS

206. PLANE GEOMETRY AND TRIGONOMETRY FROM AN ADVANCED STANDPOINT.—Postulates for Euclidean geometry, duality, non-Euclidean geometries, geometric rigor, theory of linear and angular measuresments, accuracy of logarithmic tables and calculations, nomograms and other computing aids. 3 units. (Retired Officers Program only.) PROFESSOR THOMAS

211. FINITE MATHEMATICS.—Compound statements, sets and subsets, partitions and counting, probability theory, vectors and matrices, linear programming and the theory of games, applications to behavioral science problems. 3 units. (Retired Officers Program only.) PROFESSOR GERGEN

212. MATHEMATICAL ANALYSIS.—Elements in the theory of functions, principally for real variables. Sequences and series, continuity, differentiation, integration. 3 units. (Retired Officers Program only.) PROFESSOR GERGEN

213-214. MODERN ALGEBRA.—Construction of number systems. Introduction to groups, rings, fields, vector spaces, linear transformations, matrices, determinants, systems of linear equations. Polynomials with real coefficients. Galois theory with applications to classical problems. 6 units. ASSISTANT PROFESSOR SHOENFIELD

221. DIGITAL COMPUTER.—History of computers; number representation, information storage, logical arithmetic; components and organization of computing systems; coding and programming; programmed arithmetics, function and functional

subroutines, interpretive routines, compilers; error analysis. Two lectures, one laboratory. 3 units. ASSISTANT PROFESSOR GALLIE

222. INTRODUCTION TO NUMERICAL ANALYSIS.—Error analysis; real and complex roots of equations; finite difference methods and theory of interpolation; numerical differentiation and integration; numerical integration of ordinary and partial differential equations; simultaneous equations and matrix inversion. Two lectures, one laboratory. Prerequisite: Mathematics 221. 3 units.
ASSISTANT PROFESSOR GALLIE

227-228. THEORY OF NUMBERS.—Congruences, arithmetic functions, compound moduli, quadratic reciprocity, Gauss sums, quadratic forms, sums of squares. Prerequisite: calculus. 6 units. (1960-61) PROFESSOR CARLITZ

229-230. ALGEBRAIC NUMBERS.—Ideals, unique factorization, divisors of the discriminant, determination of the class number. Prerequisite: theory of equations. 6 units. (Not 1960-61) PROFESSOR CARLITZ

235-236. ABSTRACT ALGEBRA.—Groups, fields, rings, matrices, quadratic and bilinear forms, general Galois theory, hypercomplex systems. Prerequisite: calculus. 6 units. PROFESSOR CARLITZ

247-248. ARITHMETIC OF POLYNOMIALS.—Field theory, detailed study of finite fields, special polynomials and functions, valuation theory, the zeta function. Prerequisite: Mathematics 235 or consent of the instructor. 6 units.*
PROFESSOR CARLITZ

253-254. DIFFERENTIAL GEOMETRY.—Curves and surfaces in three-dimensional Euclidean space, applicability, differential parameters, Riemannian geometry of n-space. Prerequisite: calculus. 6 units.* PROFESSOR THOMAS

271-272. INTRODUCTORY TOPOLOGY.—Topological properties of Euclidean spaces, set-theoretic and combinatorial methods. Prerequisite: calculus. 6 units.
ASSISTANT PROFESSOR SHOENFIELD

285. MATHEMATICAL ANALYSIS FOR CHEMISTS AND PHYSICISTS—Vectors, line and surface integrals, tensors, complex variables, differential and integral equations. Prerequisite: Mathematics 53. 3 units. PROFESSOR DRESSEL

286. MATHEMATICAL ANALYSIS FOR CHEMISTS AND PHYSICISTS.—Wave equation, Fourier series, heat equations, telegraphic equation, Legendre polynomials. Bessel functions, Schrödinger's equation. Prerequisite: Mathematics 53. 3 units. PROFESSOR DRESSEL

287-288. FOUNDATIONS OF MATHEMATICS.—Propositional calculus, predicate calculus, axiomatized number theory. Gödel completeness and incompleteness theorems. Recursive functions; hierarchies; constructive ordinals. Set theory; consistency of the axiom of choice. Prerequisite: Mathematics 52, or consent of the instructor. 6 units. (Not 1960-61) ASSISTANT PROFESSOR SHOENFIELD

291-292. THEORY OF FUNCTIONS.—Limits, implicit functions, power series, double series, Cauchy's theorem and its applications, residues, Riemann surfaces, conformal mapping. Prerequisite: calculus. 6 units. PROFESSOR GERGEN

FOR GRADUATES

325-326. REAL VARIABLE.—Number system, Lebesgue and Stieltjes integrals, topics in Fourier series. Prerequisite: Mathematics 291-292. 6 units. (1960-61)
ASSISTANT PROFESSOR MCLEOD

327-328. PARTIAL DIFFERENTIAL EQUATIONS.—Boundary and initial value problems: existence, uniqueness, and stability theorems, generalized solutions, Hilbert space methods, problems with approximate and improper data, numerical methods. Prerequisite: Math. 291-292 or consent of the instructor. 6 units.*
ASSISTANT PROFESSOR GALLIE

333-334. ANALYTIC THEORY OF NUMBERS.—Distribution of primes, primes in an arithmetic progression, Waring and Goldbach problems, applications of elliptic functions. Prerequisite: Mathematics 291-292. 6 units.* PROFESSOR CARLITZ

337-338. EXISTENCE THEOREMS.—Systems of partial differential equations, Pfaffian systems, theorems of Cauchy, Riquier, and Cartan, singular integral varieties. Prerequisite: Mathematics 291-292. 6 units.* PROFESSOR THOMAS

343-344. ORDINARY DIFFERENTIAL EQUATIONS.—Solution by separation of variables, exact differentials, integrating factors, solution in series. Cauchy's existence theorem, linear differential systems, singular points, partial differential equations equivalent to ordinary systems. Prerequisite: Mathematics 291-292. 6 units.* PROFESSOR THOMAS

371-372. DIMENSION THEORY.—Abstract spaces, separation theory for Euclidean spaces, dimension theory. Prerequisite: Mathematics 271-272. 6 units.* PROFESSOR ROBERTS

395-396. TOPOLOGICAL ALGEBRA.—Banach, Hilbert, and locally convex spaces: theorems of Banach, Hahn-Banach, Banach-Steinhaus, Krein-Milman, Mackey; introduction to L. Schwartz's theory of distributions. Banach algebras: the Gelfand theory, Silov's ideal theory, introduction to harmonic analysis on groups with applications to Fourier analysis; operator algebras. Prerequisite: Mathematics 236 and 292, or consent of the instructor. 6 units. (1960-61) ASSISTANT PROFESSOR WARNER

MICROBIOLOGY

PROFESSOR NORMAN F. CONANT, DIRECTOR OF GRADUATE STUDIES—321 BELL; PROFESSORS BEARD, LARSH AND D. T. SMITH; ASSOCIATE PROFESSORS OVERMAN, RUNDLES, WILLETT; ASSISTANT PROFESSOR PINE

M221. BACTERIOLOGY AND IMMUNOLOGY.—This course is devoted primarily to the study of the biological and immunological relationships of microorganisms (bacteria, fungi, Rickettsia, and viruses) in disease. It is not a course in bacteriologic technique. An additional course in technical methods is provided for those who require it. Five lectures, two 1-hour conferences, and three laboratory periods of 3 hours each weekly, in fall quarter. Prerequisites: courses in general zoology, general botany, histology and comparative anatomy, general and organic chemistry. 6 units. PROFESSORS CONANT, D. T. SMITH; ASSOCIATE PROFESSORS OVERMAN, WILLETT; ASSISTANT PROFESSORS OSTEROUT AND PINE

M323. ADVANCED BACTERIOLOGY AND IMMUNOLOGY.—This course is intended primarily for graduate students majoring in bacteriology, but it is also available as a minor to other graduate students in related fields, to whom it is recommended by respective supervising committees and with the approval of the Department of Bacteriology. Prerequisites: Bacteriology and Immunology, M221. 4 units per semester. PROFESSOR D. T. SMITH

M324. RESEARCH SEMINAR ON VIRUSES.—Limited to advanced students. 2 units per semester. PROFESSOR BEARD

M325. MEDICAL MYCOLOGY.—This course is intended to familiarize the graduate student majoring in mycology with the fungi causing disease in man and animals. The course includes practical laboratory work with materials from patients in Duke Hospital and those sent to the Duke Fungus Registry from outside sources. Prerequisites: A.M. in botany with major in mycology and M221. Course limited to four students each year. 4 units per semester. PROFESSOR CONANT

M291. MEDICAL PARASITOLOGY.—One lecture and one three-hour laboratory period per week for eleven weeks during the fall quarter. Prerequisites: courses in Zoology 204, general botany, histology and comparative anatomy. 1 unit. PROFESSORS CONANT AND LARSH

M211. HEMATOLOGY.—Three lectures and three laboratory periods of 3 hours each, weekly, for eleven weeks in the spring quarter. Prerequisites: courses in general zoology, general botany, histology and comparative anatomy. 4 units. ASSOCIATE PROFESSOR RUNDLES

M326-327. SEMINAR.—Graduate students and staff meet weekly to discuss and review recent microbiological literature. Required of all graduate students who are candidates for the A.M. or Ph.D. degree. 2 units.
PROFESSORS CONANT AND SMITH; ASSOCIATE PROFESSORS GRESS, OVERMAN, AND WILLETT; ASSISTANT PROFESSORS OSTERHOUT AND PINE

PHILOSOPHY

PROFESSOR BAYLIS, CHAIRMAN—212B WEST DUKE BUILDING; ASSOCIATE PROFESSOR PEACH, DIRECTOR OF GRADUATE STUDIES—212A WEST DUKE BUILDING; PROFESSOR NEGLEY; ASSOCIATE PROFESSORS CLARK AND WELSH; ASSISTANT PROFESSOR WILSON

The Department of Philosophy offers graduate work leading to the A.M. and Ph.D. degrees. Students may specialize in any of the following fields: the History of Philosophy; Logic; Philosophy of Science; Epistemology; Metaphysics; Philosophical Analysis; Ethics; Aesthetics; Political Philosophy; and Philosophy of Law.

Individual programs of study are developed for each student. The following requirements, however, are fundamental: (1) In February of their first year new graduate students in philosophy who are not then taking the preliminary examinations for the Ph.D. are required to take qualifying examinations in the history of philosophy, ancient and modern on a central philosophical topic, and in logic, both classical and symbolic, unless they have taken and passed with a grade of E or G Philosophy 331c, Logic, in their first semester. A student's achievement on these examinations will be regarded as indicative of his ability to undertake advanced graduate work. (2) Preliminary examinations for the Ph.D., which may be taken only after a student has met the language requirements for that degree, should be passed during the first year of study beyond the A.M. degree. In these examinations students are expected to combine historical knowledge with critical understanding.

Work in a minor field outside of the Department, but not necessarily confined to any one department, must include six units for the A.M. and nine for the Ph.D. and may include more as a student's program requires or permits.

FOR SENIORS AND GRADUATES

202. PHILOSOPHY OF ART.—A study of some fundamental issues in aesthetics, with particular reference to the fields of literature, music, and painting. Problems discussed include: the nature and purposes of the arts; meaning in the arts: art and morality; the role of standards in art criticism; aesthetic judgment; interpretation and evaluation. 3 units. ASSOCIATE PROFESSOR WELSH

203. CONTEMPORARY ETHICAL THEORIES.—Critical discussion and evaluation of the ethical views of twentieth-century British and American philosophers. 3 units. (Not 1960-61) PROFESSOR BAYLIS

205. PHILOSOPHY OF HISTORY.—Discussion of the method, metaphysical implications, and influence of interpretations of history: Hegel, Marx, Spengler, Toynbee. 3 units. PROFESSOR NEGLEY

208. POLITICAL PHILOSOPHY.—Analysis of the structure of social organization with particular reference to the nature of political and legal institutions. 3 units. PROFESSOR NEGLEY

211. PLATO.—An examination of Plato's views with respect to knowledge, reality, and the state. 3 units.*

217. ARISTOTLE.—An analysis of Aristotle's views with respect to knowledge, reality, and the state. 3 units. (1960-61)

219. KANT.—Reading and discussion of his philosophy, with some attention to historical continuity. 3 units.* PROFESSOR NEGLEY

225. BRITISH EMPIRICISM.—A critical study of the writings of Locke, Berkeley and Hume, with special emphasis on problems in the theory of knowledge. 3 units. (Not 1960-61) ASSOCIATE PROFESSOR PEACH

227. CONTINENTAL RATIONALISM.—A critical study of the writings of Descartes, Spinoza, and Leibnitz, with special emphasis on problems in the theory of knowledge and metaphysics. 3 units. (1960-61) ASSOCIATE PROFESSOR PEACH

228. RECENT AND CONTEMPORARY PHILOSOPHY.—A critical study of outstanding philosophical views from Schopenhauer to the present. 3 units. ASSOCIATE PROFESSORS PEACH AND WELSH

229. AMERICAN PRAGMATISM.—Studies in the philosophy of Peirce, James, Dewey and Mead. 3 units.* ASSOCIATE PROFESSOR WELSH

232. SPECIAL PROBLEMS IN THE PHILOSOPHY OF SCIENCE.—Selected topics concerning the methods of the sciences and the philosophy of science. 3 units. (1960-61) ASSOCIATE PROFESSOR CLARK

241. LOGIC.—Fundamental Problems of Logic. 3 units. (Not 1960-61) ASSOCIATE PROFESSOR CLARK AND ASSISTANT PROFESSOR WILSON

250. PHILOSOPHICAL ANALYSIS.—A critical study of recent and contemporary essays in philosophical analysis, and an evaluation of the nature, methods, and results of this movement. 3 units. (1960-61) PROFESSOR BAYLIS AND ASSOCIATE PROFESSOR CLARK

252. METAPHYSICS.—A critical and evaluative study of rival metaphysical theories and their bases. Analysis of the fundamental metaphysical categories and of metaphysical methods. 3 units. (Not 1960-61) PROFESSOR BAYLIS

287-288. FOUNDATIONS OF MATHEMATICS.—Propositional calculus, predicate calculus, axiomatized number theory. Gödel completeness and incompleteness theorems. Recursive functions; hierarchies; constructive ordinals. Set theory; consistency of the axiom of choice. Prerequisite: Mathematics 53, or consent of instructor. 6 s.h. (Also listed as Mathematics 287-288.) ASSISTANT PROFESSOR SHOENFIELD

291, 292. CRITICAL PHILOSOPHY.—The analysis of basic philosophical concepts and beliefs with a view to critical evaluation and constructive emendation of them. Emphasis on the practice as well as the principles of philosophical criticism and problem solving. 3 units each. Enrollment only by permission of the Department. 291 is ordinarily prerequisite for 292. ALL MEMBERS OF THE GRADUATE STAFF

FOR GRADUATES

331, 332. SEMINARS IN SPECIAL FIELDS OF PHILOSOPHY.—3 units. ALL MEMBERS OF THE GRADUATE STAFF

PHYSICS

PROFESSOR NIELSEN, CHAIRMAN—119 PHYSICS BUILDING; PROFESSORS LEWIS, DIRECTOR OF GRADUATE STUDIES—043 PHYSICS BUILDING; PROFESSORS GORDY, NEWSOM, AND SPONER; ASSOCIATE PROFESSORS BLOCK, GREULING, AND WILLIAMSON; ASSISTANT PROFESSOR MEYER; VISITING ASSISTANT PROFESSORS DUNCAN AND ROBL

The Department of Physics offers graduate work leading to the A.M. and Ph.D. degrees. Course work is designed to give a broad basic foundation in classical and modern physics. All graduate students will be expected to acquire a thorough knowledge of the various branches of classical physics and some familiarity with modern physics and with basic laboratory skills. They will be required to take such course work in the 200-number courses as may be necessary to obtain this foundation.

The student will be required to take such course work as will best be adapted to the kind of work he will subsequently specialize in and to the kind of research he will undertake. The choice of minor will be similarly determined.

Since a practical reading knowledge of French and German is highly desirable for the student of physics, he should satisfy these language requirements as early as possible.

FOR SENIORS AND GRADUATES

201, 202. MECHANICS.—The fundamental principles of Newtonian mechanics; general dynamics of systems of particles, and rigid bodies; the methods of Lagrange and Hamilton; generalized mechanics. Prerequisite: Physics 125. 6 units.
ASSOCIATE PROFESSOR GREULING

213, 214. CONTEMPORARY PHYSICS.—A course which covers the fundamental concepts and the experimental basis of modern physics. Three lectures each week. 6 units. PROFESSORS SPONER AND LEWIS

217, 218. ADVANCED PHYSICS LABORATORY.—Measurements involving the fields of mechanics, electricity, magnetism, heat, sound, optics and modern physics. 2-6 units. ALL MEMBERS OF THE GRADUATE STAFF

219. ELECTRICITY AND MAGNETISM.—Fundamentals of electricity and magnetism, physical optics, electromagnetic waves. 3 units. PROFESSOR LEWIS

220. ADVANCED ELECTRONICS.—Vacuum tubes and solid state devices, advanced circuit analysis. 3 or 4 units. PROFESSOR LEWIS

FOR GRADUATES

303, 304. THERMODYNAMICS, STATISTICAL MECHANICS.—Fundamental laws of thermodynamics and statistical mechanics with applications to physics and chemistry. Gas laws; transport phenomena; elements of quantum statistics. 6 units. (1960-61) ASSISTANT PROFESSOR MEYER

306. LOW TEMPERATURE PHYSICS.—A study of the properties of matter near the absolute zero of temperature; superconductivity, liquid helium, adiabatic demagnetization. Prerequisite: Physics 303. 3 units. (Not 1960-61)
ASSISTANT PROFESSOR MEYER

309. SOLID STATE.—A study of matter in the condensed state, including metals, semiconductors, and insulators. Quantum theory of solids. Thermodynamic and electromagnetic properties of matter. Prerequisites: Physics 303 and 315 or equivalent. 3 units. (1960-61) ASSISTANT PROFESSOR MEYER

315-316. PRINCIPLES OF QUANTUM THEORY.—Original and fundamental concepts of quantum theory; wave and matrix mechanics; theory of measurements; exclusion principle and electronic spin. Prerequisite: Physics 201-202. 6 units. (Not 1960-61) VISITING ASSISTANT PROFESSOR DUNCAN

318-319. ELECTROMAGNETIC FIELD THEORY.—Electrostatics and potential theory; dielectric and magnetic media; the magnetic field of currents and the law of induction. Maxwell's electrodynamics; theory of wave optics; refraction; interference, and diffraction. Crystal optics. Prerequisite: Physics 219. 6 units. (Not 1960-61) ASSOCIATE PROFESSOR GREULING

320. THEORY OF ELECTRONS.—Lorentz' equations of electrodynamics. Classical theories of dispersion, magnetism, and conductivity. Theory of relativity. Prerequisite: Physics 318-319. 3 units.* ASSOCIATE PROFESSOR GREULING

323. THEORY OF ATOMIC SPECTRA.—Excitation of spectra, computation of wave lengths from photographs of spectra, study of the structure of atomic spectra with applications. 3 units. (1960-61) PROFESSOR SPONER

324. THEORY OF MOLECULAR SPECTRA.—A study of the structure of molecular spectra with applications. 3 units. (1960-61) PROFESSOR SPONER

331. MICROWAVE RADIATION.—Microwave generators, cavity resonators, transmission lines, radiation propagation and detection. 3 units. (1960-61)
PROFESSOR GORDY

335. MICROWAVE SPECTROSCOPY.—Application of microwaves in the determination of molecular, atomic, and nuclear properties. Stark and Zeeman effects in microwave spectroscopy. Magnetic resonance absorption. 3 units. (Not 1960-61) PROFESSOR GORDY

340. STRUCTURE OF MATTER.—Selected topics dealing with the constitution of matter, such as crystal structure and x-rays, the solid state and problems of molecular structure. 3 units.* PROFESSOR SPONER

341. ADVANCED TOPICS IN QUANTUM THEORY.—Quantum theory of radiation and collisions with special reference to nuclear and high energy physics. Prerequisite: Physics 315-316. 3 units. (1960-61)
VISITING ASSISTANT PROFESSOR DUNCAN

343. NUCLEAR PHYSICS.—Elementary theory of the deuteron; low energy neutron proton scattering; theory of nuclear reactions; penetration of potential barriers; nuclear energy levels. Prerequisite: Physics 315. 3 units. (1960-61)
PROFESSOR NEWSON

344. ADVANCED NUCLEAR PHYSICS.—The deuteron, nuclear forces, scattering of elementary particles, beta-radiation. Other aspects of nuclear physics susceptible of theoretical interpretation. Prerequisite: Physics 343. 3 units. (Not 1960-61) VISITING ASSISTANT PROFESSOR ROBL

345. HIGH ENERGY NUCLEAR PHYSICS.—Experimental and theoretical aspects of high energy nuclear processes; properties of mesons and hyperons. 3 units. (Not 1960-61) ASSOCIATE PROFESSOR BLOCK

351-352. SEMINAR.—A series of weekly discussions on topics related to the research projects under investigation in the Department. 2 units.
ALL MEMBERS OF THE GRADUATE STAFF

PHYSIOLOGY AND PHARMACOLOGY

PROFESSOR F. G. HALL, DIRECTOR OF GRADUATE STUDIES—203 MEDICAL SCHOOL; PROFESSORS F. BERNHEIM, EADIE; ASSOCIATE PROFESSOR HULL; ASSISTANT PROFESSORS KOSTYO AND LONG

M203. HUMAN PHYSIOLOGY.—A course in human physiology in which the functions of all organ systems are covered. Special emphasis is given to the study of neuro-muscular and cardiovascular functions. Lectures, laboratory experiments and demonstrations, and conferences. Limited to sixteen students. Prerequisites: Chemistry 1-2 and Zoology 1-2. 6 units. PROFESSORS HALL AND EADIE

M261-262. HUMAN PHYSIOLOGY.—Six lectures and twenty laboratory hours per week. Prerequisites: Anatomy M201 and Biochemistry M241 (or equivalents) and at least one year of college physics. Feb.-June. Credits depending on work taken. (Maximum 8 units.) PROFESSOR HALL AND ALL MEMBERS OF THE GRADUATE STAFF

M365. RESPIRATION AND AERO-PHYSIOLOGY.—A study of the fundamental respiratory processes in living organisms, and of the special physiological responses and adjustments of the individual during high altitude flight. Lectures, conferences, laboratory. Prerequisites: M261-262 or equivalent. 4 units. PROFESSOR HALL

M369. PHARMACOLOGY. MODE OF ACTION OF DRUGS.—Studies and discussions of the pharmacological action of drugs in terms of biochemical and physiological processes. Lectures, conferences, and laboratory. Prerequisites: M261-262 or equivalent. 4 units. PROFESSOR F. BERNHEIM

M370. SEMINAR.—A weekly meeting of graduate students and staff in which papers reviewing classical and current physiological literature are reported. Required of all graduate students who are candidates for the A.M. or Ph.D. degree. 2 units. PROFESSORS HALL AND BERNHEIM; ASSOCIATE PROFESSOR HULL

M372. RESEARCH.—Individual investigations in the various fields of physiology. Credits to be arranged. PROFESSORS HALL AND BERNHEIM; AND ASSOCIATE PROFESSOR HULL

POLITICAL SCIENCE

PROFESSOR RANKIN, CHAIRMAN—308 LIBRARY; PROFESSOR WILSON, DIRECTOR OF GRADUATE STUDIES—405 LIBRARY; PROFESSORS BRAIBANTI, COLE, CONNERY, AND HALLOWELL; ASSOCIATE PROFESSOR SINDLER; ASSISTANT PROFESSOR PROCTOR; VISITING PROFESSORS MAYO AND PARTRIDGE; VISITING ASSOCIATE PROFESSOR WEBB

The Department of Political Science offers graduate work leading to the A.M. and Ph.D. degrees. Before being admitted to candidacy for the Ph.D. degree, an applicant is normally expected to have qualified for the A.M. degree.

Instruction is designed to prepare the student for teaching, for government service, and for other work related to public affairs. Before undertaking graduate study in political science, a student is ordinarily expected to have completed at least 12 semester hours of course work in political science, including some work in American government.

Fields of political science in which instruction is at present offered for candidates for the degree of Doctor of Philosophy are the following; American Government and Constitutional Law; Comparative Government (with special reference to European Institutions, Far Eastern Institutions, or Commonwealth Institutions); Political Theory; American State and Local Government; International Law and Organization; Public Administration. Candidates for the degree of Doctor of Philosophy who propose to major in political science must elect five fields, including Comparative Government and Political Theory; at least one of the five fields must be taken in a department other than the Department of Political Science.

FOR SENIORS AND GRADUATES

207. AMERICAN CONSTITUTIONAL LAW AND THEORY.—A study of leading principles of American government, as developed through judicial interpretation of the Constitution. 3 units. PROFESSOR RANKIN

209. PROBLEMS IN STATE AND LOCAL GOVERNMENT IN THE UNITED STATES.—A study of the historical development of state and local governments, their present organization and subdivisions, and their relation to each other. Special attention is given to the position of the states in the federal union through the study of federal-state, inter-state, and state-local relation. 3 units.
PROFESSOR RANKIN

211. POLITICAL INSTITUTIONS OF THE FAR EAST.—An analysis of the ideas underlying the development of government in Japan, China, and Korea. Study of the writings of Lao-tse, Confucius, and the sacred books of Buddhism and Shinto. Particular attention is given to the theory of Confucian bureaucracy, the Taikwa Reform, the development of the Tokugawa administrative state, the constitutional reforms of Sun Yat-sen in China and of the Meiji Era in Japan. 3 units.
PROFESSOR BRAIBANTI

212. INTERNATIONAL POLITICS OF THE FAR EAST.—An analysis of the relations of China, Japan, and Korea *inter se* and with outside powers, with emphasis upon changing power relationships within the Asian culture sphere. 3 units.
PROFESSOR BRAIBANTI

221. INTERNATIONAL PUBLIC ORGANIZATION.—A study of the structure and functioning of the United Nations organs, of related specialized agencies such as the International Labor Organization, and of regional agencies such as the Organization of American States and the North Atlantic Treaty Organization. 3 units. PROFESSOR WILSON

223. POLITICAL THOUGHT TO THE SEVENTEENTH CENTURY.—A survey from the time of Plato to the close of the seventeenth century; Graeco-Roman, Patristic and Germanic thought; individualism and cosmopolitanism; effect of the Church-State controversy and the conciliar movement; medieval constitutionalism; legislative sovereignty. 3 units. PROFESSORS HALLOWELL AND WILSON

224. MODERN POLITICAL THEORY.—An historical survey and philosophical analysis of political theory from the beginning of the seventeenth to the middle of the nineteenth century. Attention is given to the rise of liberalism, the Age of

Enlightenment, the romantic and conservative reaction, idealism and utilitarianism. 3 units. PROFESSOR HALLOWELL AND VISITING PROFESSOR MAYO

225. COMPARATIVE GOVERNMENT AND POLITICS.—A comparative study of modern political institutions and processes, with particular attention to European constitutional government and politics. 3 units.
PROFESSOR COLE AND VISITING PROFESSOR PARTRIDGE

226. COMPARATIVE GOVERNMENT AND POLITICS.—A comparative study of modern political institutions and processes, with particular attention to European totalitarian and authoritarian political system. 3 units.
PROFESSOR COLE AND ASSISTANT PROFESSOR PROCTOR

227-228. INTERNATIONAL LAW.—Elements of international law, particularly as interpreted and applied by the United States; rights and duties of states with respect to recognition, state territory and jurisdiction, nationality, diplomatic and consular relations, treaties, treatment of aliens, pacific settlement of disputes, international regulation of the use of force, and collective responsibility. 6 units.
PROFESSOR WILSON

229. RECENT AND CONTEMPORARY POLITICAL THEORY.—The rise of positivism and its impact upon modern political thought, the origins of socialism, Marxism and its variants, socialism in the Soviet Union, nationalism, Fascism and National Socialism, the crisis in modern democracy, Christianity and the social order. 3 units. PROFESSOR HALLOWELL

230. AMERICAN POLITICAL INSTITUTIONS.—A study of the formation and development of institutions of the national government in the United States, with historical and analytical treatment. Among other topics, this course is concerned with the Constitutional Convention of 1787, and the development of Congress, the Presidency, and the Supreme Court. 3 units. PROFESSOR RANKIN

231. AMERICAN POLITICAL THEORY—An analysis of the main currents in American political thought from colonial beginnings to the present day, with emphasis upon the development of liberalism in America. 3 units.
PROFESSOR HALLOWELL AND VISISTING PROFESSOR MAYO

234. CIVIL-MILITARY RELATIONSHIPS IN AMERICAN GOVERNMENT.—A consideration of the role of the military in American government both in practice and in theory. Special emphasis will be given to formal civil-military structural arrangements for determining policies such as the National Security Council, and to the degree of civilian control within the military establishment. 3 units.*
PROFESSOR CONNERY

235. THE BRITISH COMMONWEALTH.—An analysis of the political relationships between the members of the Commonwealth and a comparative study of the political systems of the Commonwealth countries, with particular reference to Canada. A course designed in part to utilize the occasional services of visiting professors from Commonwealth countries. 3 units.
VISITING PROFESSOR VAN DER HORST

241. ADMINISTRATIVE MANAGEMENT.—An advanced course in public administration with special attention being given to the development of scientific management, its application to government in the United States, and a consideration of current problems in organization, procedures, work simplification, and manage ment improvement. 3 units.
PROFESSOR CONNERY AND VISITING ASSOCIATE PROFESSOR WEBB

242. NATIONAL ADMINISTRATION.—A study of the administrative organization, working concepts and procedures of the United States Government, illustrated through the operations of the Bureau of the Budget. 3 units.
PROFESSOR CONNERY

246. GOVERNMENT ADMINISTRATION AND PUBLIC POLICY.—Through use of the laboratory and case study techniques, a consideration of the types of administrative problems that the United States Government encounters in the field of public policy, and their possible solution. 3 units. PROFESSOR CONNERY

275. THE NATIONAL PARTY SYSTEM.—An intensive examination of selected facets of American national political parties, such as relationships between presidential and congressional politics, the politics of national conventions, recent foreign policy and party alignments, and the controversy over party government. 3 units. ASSOCIATE PROFESSOR SINDLER

276. COMPARATIVE STATE PARTIES AND POLITICS.—A selective analysis of party patterns in the states, including such topics as: classification schemes for state party systems, the impact of various nominating procedures on party organization, relationships between national and state politics, and the influence of party system on the operation of state government, with special attention to the South. 3 units. ASSOCIATE PROFESSOR SINDLER

291. PROBLEMS OF MUNICIPAL GOVERNMENT.—An analysis of problems relating to the structural system and activities of municipalities in the United States. 3 units. PROFESSOR RANKIN

292. MUNICIPAL ADMINISTRATION.—A study of principles and methods relating to municipal administration in the United States. 3 units.
PROFESSOR RANKIN

FOR GRADUATES

301-302. DEPARTMENTAL GRADUATE SEMINAR.—An introduction to research methodology, inter-disciplinary relationships and current research problems. Required of all graduate majors in political science. No credit.
PROFESSORS WILSON, RANKIN, COLE, HALLOWELL, CONNERY, BRAIBANTI, SINDLER, OTHER MEMBERS OF THE FACULTY AND VISITING LECTURERS

310. SEMINAR IN STATE GOVERNMENT.—Open to students who have completed course 209 or its equivalent. 3 units. PROFESSOR RANKIN

311. SEMINAR IN FAR EASTERN POLITICS.—Open to students who have completed course 211 or its equivalent. 3 units. ASSOCIATE PROFESSOR BRAIBANTI

321,322. SEMINAR IN POLITICAL THEORY.—Open to students who have completed 6 semester hours in Political Science 223, 224, 229, 231 or their equivalents. 6 units. PROFESSOR HALLOWELL

325, 326. SEMINAR IN COMPARATIVE GOVERNMENT.—Open to students who have completed courses 225 and 226 or their equivalents. 6 units.
PROFESSOR COLE AND VISITING PROFESSOR PARTRIDGE

327, 328. SEMINAR IN INTERNATIONAL LAW.—Open to students who have completed course 227-228 or its equivalent. 6 units. PROFESSOR WILSON

341. SEMINAR IN PUBLIC ADMINISTRATION.—Directed reading, discussion and reports concerning the theory and practice of Public Administration. 3 units.
PROFESSOR CONNERY

401. SEMINAR ON THE BRITISH COMMONWEALTH.—3 units.
PROFESSORS COLE, HAMILTON, SPENGLER, AND BRAIBANTI

RELATED COURSE WORK IN THE SCHOOL OF LAW

There may be graduate credit for course work completed in the Duke University School of Law, under regulations referred to on page 214 of this *Bulletin*.

PSYCHOLOGY

PROFESSOR RODNICK, CHAIRMAN—106 BIVINS HALL; PROFESSOR ZENER, DIRECTOR OF GRADUATE STUDIES—205 PSYCHOLOGICAL LABORATORY; PROFESSORS ADAMS, COHEN, DAI, KIMBLE, KOCH, AND KUDER; ASSOCIATE PROFESSORS BANHAM, DIAMOND, GARMEZY, GUTTMAN, AND JONES; ASSISTANT RESEARCH PROFESSOR GAFFRON; ASSISTANT PROFESSORS BONEAU, BORSTELMANN, BREHM, DASTON, FARINA, LAKIN, OBRIST AND SPEILBERGER; LECTURER GEHMAN

The Department offers training leading to the A.M. and Ph.D. degrees, with specialization in a number of areas. Training for the Ph.D. is offered in general

experimental and physiological, social, clinical, and counseling psychology. A program of studies leading to the A.M. degree is offered in all areas except clinical and counseling psychology.

Whatever the field of psychology in which a student eventually specializes, he is required to have a thorough background in the facts, methods, and theories of general psychology. Graduate programs are arranged to achieve this common background primarily during the first year, with specialization in course work and research in subsequent years.

Normally the candidate for the Ph.D. degree is expected, early in his second year of residence, to formulate his further program of advanced studies, and by the end of his second year to have passed his language examinations, a departmental qualifying examination in his areas of intended doctoral research, and the preliminary examination. By this time also his doctoral dissertation subject should have been formulated. Emphasis is laid upon the completion of the dissertation, directed by a member of the staff, demonstrating competence and independence in the investigation of an original and significant problem.

As an integral part of their academic work during the first, second, and final year of residence, students specializing in clinical or counseling psychology will undertake field work in a variety of clinical settings. In addition, one year will be spent in an appropriate, approved internship, and a final year in residence at Duke University during which the dissertation should be completed.

The field of minor work is not restricted, but it may be pointed out that the fields most relevant to graduate study in psychology are zoology, philosophy of science, sociology and anthropology, physiology, neuroanatomy, mathematics, and education.

Further details concerning the program of studies in psychology may be obtained from the Director of Graduate Studies in Psychology.

201-202. PROSEMINAR.—An integrated core curriculum in general psychology, designed to provide an advanced background in the principles, and the empirical and theoretical methods, of the major fields of psychology. The separate sections, listed separately below, may be taken as individual courses by qualified students in other departments (for 3 units credit when special supplementary reading is undertaken). Students in psychology are expected normally to take all sections (2 units each), or their equivalents.

PROFESSORS ADAMS, KIMBLE, KOCH, KUDER, ZENER; ASSOCIATE PROFESSORS DIAMOND, GARMEZY, GUTTMAN; ASSISTANT PROFESSOR BREHM

201 A Learning	Guttman, Kimble	2-3 units
201 B Biological Bases	Diamond	2-3 units
201 C Personality Dynamics	Rodnick	2-3 units
201 D Perception	Zener	2-3 units
202 A Social Psychology	Brehm, Jones	2-3 units
202 B Systematic Psychology and Scientific Method	Koch	2-3 units
202 C Experimental-Personality	Garmezy	2-3 units

205. SENSORY DISCRIMINATION.—An analysis of neural mechanisms for discriminating between modalities, qualities within a modality, and differences in intensity and location. The neural basis for more complex discriminations; e.g., temporal and spatial patterns of sensation will also be considered. 3 units.
ASSOCIATE PROFESSOR DIAMOND

209. EXPERIMENTAL METHODS IN PSYCHOLOGY.—A study of methods for the identification, control, and recording of essential variables in psychological situations, with emphasis upon the relation of experimental techniques to problem formulation. Laboratory, lectures, and discussions. 3 units. PROFESSOR ZENER

212. PHYSIOLOGICAL PSYCHOLOGY.—An advanced study of the interrelationships between psychological and physiological processes. 3 units.
ASSISTANT PROFESSOR OBRIST

215. DEVELOPMENTAL PSYCHOLOGY.—The environmental forces conditioning the development of personality structure and the mechanisms contributing to psychological growth; critical periods in character formation from infancy to senescence. 3 units. PROFESSOR ADAMS

221-222. PROPRACTICUM.—Lectures, demonstrations and practice in the use of basic procedures, projective and non-projective, employed in clinical psychology; principles of interpretation and reporting of test findings. Laboratory periods will be held in clinical field facilities. 3 units each semester.
ASSOCIATE PROFESSOR GARMEZY AND ALL MEMBERS OF THE CLINICAL STAFF

236. THEORETICAL PSYCHOLOGY.—This course is devoted to the analysis of techniques of theory construction in psychology. The discussion of these methodological issues is co-ordinated with the analysis of concrete formulations in contemporary psychological theory. 3 units. PROFESSOR KOCH

242. MEASUREMENT OF APTITUDES, INTEREST, AND ACHIEVEMENT (also listed as Education 242).—A study of the theories and principles of psychological measurement as applied to aptitude, interest, and achievement testing. 3 units. PROFESSOR KUDER

265. FUNDAMENTAL STATISTICAL APPLICATIONS IN PSYCHOLOGICAL RESEARCH.—Introduction to probability and the use of statistics in description and hypothesis testing in psychology including the following applications: correlational techniques, chi-square and t tests, distribution-free tests and one-way analysis of variance. Prerequisite: Psychology 117-118 or equivalent. 3 units. (Second semester.) ASSISTANT PROFESSOR BONEAU

266. ADVANCED STATISTICAL APPLICATIONS IN PSYCHOLOGICAL RESEARCH.—The basic theory and applications of analysis of variance techniques to complex experimental designs will be covered. Additional advanced techniques, including factor analysis, will be introduced. Prerequisite: Psychology 265 or equivalent. 3 units. (First semester.) ASSISTANT PROFESSOR BONEAU

271. SEMINAR IN SELECTED PROBLEMS.—3 units.
VISITING PROFESSOR KOHLER

FOR GRADUATES

303-304. RESEARCH.—2 or 3 units. ALL MEMBERS OF THE GRADUATE STAFF

305. PSYCHOPATHOLOGY.—An examination of behavior disorders, with particular emphasis on explanatory concepts and the evidence from research in this field. 3 units. PROFESSOR RODNICK

306. SEMINAR IN DEVELOPMENTAL PSYCHOLOGY.—2 or 3 units.
PROFESSOR ADAMS

308. SEMINAR IN PSYCHOPATHOLOGY AND PERSONALITY THEORY.—3 units. PROFESSOR RODNICK

309. PROBLEMS OF LEARNING.—3 units. PROFESSOR KIMBLE

310. SEMINAR IN PERCEPTION.—3 units. PROFESSOR ZENER

311. SEMINAR IN INSTRUMENTAL BEHAVIOR.—3 units.
ASSOCIATE PROFESSOR GUTTMAN

312. SEMINAR IN THEORETICAL PSYCHOLOGY.—3 units. (First semester)
PROFESSOR KOCH

316. SEMINAR IN SOCIAL PSYCHOLOGY.—3 units.
ASSOCIATE PROFESSOR JONES

318. SEMINAR IN SOCIAL INFLUENCE.—3 units.
ASSISTANT PROFESSOR BREHM

320. SEMINAR IN THE THEORY OF MENTAL TESTS.—3 units.
PROFESSOR KUDER

322. SEMINAR IN PERSONNEL PSYCHOLOGY.—3 units. PROFESSOR KUDER

324. SEMINAR: BEHAVIORAL STUDIES OF THE BRAIN.—3 units.
ASSOCIATE PROFESSOR DIAMOND

335-336. CLINICAL PSYCHOLOGY PRACTICUM.—Seminar discussion and supervised field experience in the application of basic psychological procedures and principles to clinical cases in a variety of institutional settings. Prerequisite: Psychology 221-222. 3 units each semester. PROFESSOR COHEN AND ALL MEMBERS OF THE CLINICAL STAFF

338. SEMINAR IN RESEARCH IN MENTAL HEALTH AND MENTAL DISORDER.—3 units. ASSOCIATE PROFESSOR GARMEZY

341. SOCIETY, CULTURE AND BEHAVIOR DISORDERS.—A critical survey of current theories of the structure and genesis of psychoneurosis, with particular stress on psychoneurotic disturbances as problems of the self in relation to society and culture. 3 units. Second semester. PROFESSOR DAI

342. PRINCIPLES OF PSYCHOTHERAPY.—With permission of instructor. Prerequisite: Psychology 341. 3 s.h. PROFESSOR DAI

344, 345. ADVANCED SEMINAR IN CLINICAL PSYCHOLOGY.—1 unit each semester. ALL MEMBERS OF THE CLINICAL STAFF

371. PRE-SCHOOL BEHAVIOR PROBLEMS.—3 units.*
ASSOCIATE PROFESSOR BANHAM

RELATED COURSES IN OTHER DEPARTMENTS

Education 217, 227, 228, 240, 241, 244, 248, 258; Philosophy 103, 104, 203, 208, 224, 225, 228, 232, 241, 250, 331-332; Sociology and Anthropology 93, 94, 212, 213, 214, 238, 243, 246, 271, 276, 330, 380; Zoology, 151, 252, 271, 324, 328, 255-356; Physiology M261-262; Anatomy M204.

RELIGION

PROFESSOR BEACH, DIRECTOR OF GRADUATE STUDIES—308 DIVINITY SCHOOL; PROFESSORS CLARK, CUSHMAN, PETRY, AND STINESPRING; ASSOCIATE PROFESSORS ANDERSON, HENRY, HERZOG, LACY, MANSCHRECK, RANSON, AND PRICE; ASSISTANT PROFESSOR HILLEBRAND

The Department of Religion offers graduate work leading to the A.M. and Ph.D. degrees. Students may major in one of three fields: (1) Biblical Studies; (2) Historical Studies; and (3) Systematic and Contemporary Studies. They will be expected to take such courses in one or both of the other fields as will conduce to an adequate understanding of their chosen fields of specialization.

In addition to course work in these major fields, students will take such other courses in cognate fields as will contribute to the enrichment of their major studies. For those majoring in Biblical Studies, courses in ancient language and literature are suggested; for those majoring in Historical Studies, courses in history are suggested; and for those majoring in Systematic and Contemporary Studies, courses in philosophy, political science, and sociology are suggested.

Candidates for the Ph.D. degree must complete the language requirements in both French and German not later than the beginning of the second year of residence.

FIELD I. BIBLICAL STUDIES

201-202. FIRST HEBREW.—The principles and structure of the Hebrew language with translation of selected Old Testament narratives. 6 units.
PROFESSOR STINESPRING

207-208. SECOND HEBREW.—II Samuel the first semester and the Qumran Isaiah Scroll the second. 6 units.

209. BIBLICAL THEOLOGY.—A study of the Old and New Testaments from the standpoint of their theological unity. 3 units. ASSOCIATE PROFESSOR ANDERSON

217. THE NEW TESTAMENT IN GREEK.—Extensive reading of the Greek text of the New Testament, with special emphasis upon its interpretation. 3 units.
PROFESSOR CLARK

218. GALATIANS AND FIRST CORINTHIANS.—A detailed study of two of Paul's major epistles, based on the Greek text. 3 units. (Not 1960-61)
ASSOCIATE PROFESSOR ANDERSON

228. THE THEOLOGY OF THE GOSPEL AND EPISTLES OF JOHN.—A study of the origin of these writings; the provenance of their thought forms and symbolism; their influence on the early church; and contemporary significance. 3 units.
ASSOCIATE PROFESSOR PRICE

302. THEOLOGY OF THE INTERTESTAMENTAL LITERATURE.—A study of the Apocrypha and Pseudepigrapha with special reference to their relation to the theology of the Old and New Testaments. 3 units.
ASSOCIATE PROFESSOR ANDERSON

304. ARAMAIC.—A study of the Aramaic portions of the Old Testament, and selected passages from the Targums, Midrashes, and Talmuds. 3 units.
PROFESSOR STINESPRING

305. THIRD HEBREW.—An interpretative study of late Hebrew prose, with readings from Chronicles, Ecclesiastes, and the Mishnah. 3 units. (Not 1960-61)
PROFESSOR STINESPRING

307. SYRIAC.—A study of the script and grammar, with readings from the Syriac New Testament and other early Christian documents. Some knowledge of Hebrew and Aramaic prerequisite. 3 units. (1960-61) PROFESSOR STINESPRING

309. HISTORY OF THE ANCIENT NEAR EAST.—A specialized study of the civilizations of Egypt, Palestine, Syria, and Mesopotamia in the light of Biblical archaeology. 3 units. (Not 1960-61) PROFESSOR STINESPRING

310. OLD TESTAMENT PROPHECY.—The prophetic movement in Israel with special emphasis on the theological standpoint of the prophets of the eighth century B.C. 3 units. PROFESSOR STINESPRING

311. THE LIFE AND TEACHINGS OF JESUS.—A study of the events and sayings of the historical Jesus, in the light of His mission. 3 units. PROFESSOR CLARK

313. THE APOSTOLIC FATHERS.—A study of the Christian development from Clement of Rome to Polycarp (90-155 A.D.), with readings in the Greek text. 3 units. PROFESSOR CLARK

316. HELLENISTIC RELIGIONS.—A study of the Gentile religions in the Roman Empire, at the beginning of the Christian era. 3 units. PROFESSOR CLARK

317. THE SYNOPTIC GOSPELS.—A detailed study of their characteristics and contents, based upon the Greek text, with attention to their respective sources and to the development of synoptic criticism. 3 units. PROFESSOR CLARK

318. TEXTUAL CRITICISM OF THE NEW TESTAMENT.—A study of the scientific recovery of the Greek text on which modern versions are based; manuscript discoveries; principles of textual criticism; practice in collating original manuscripts in the Duke collection. 3 units. PROFESSOR CLARK

RELATED COURSES IN OTHER DEPARTMENTS

Greek 257; Latin 258; Aesthetics, Art, and Music 215, 216.

FIELD II. HISTORICAL STUDIES

224. CONCEPTIONS OF MAN IN WESTERN THOUGHT.—An analysis and interpretation of important types of philosophical and theological theory. 3 units.
PROFESSOR CUSHMAN

235. THE REFORMATION IN THE LIFE AND THOUGHT OF MELANCHTHON.—A study of Reformation thought patterns, trends, and tensions as seen

through the work of Philip Melanchthon (1497-1560). Special consideration will be given to other major figures in relation to Melanchthon. 3 units.
ASSOCIATE PROFESSOR MANSCHRECK

296. RELIGION ON THE AMERICAN FRONTIER.
ASSOCIATE PROFESSOR HENRY

321. PLATONISM AND CHRISTIANITY.—An analysis of Plato's philosophy and a survey of its continuing influence in Hellenistic and Christian thought. 3 units. PROFESSOR CUSHMAN

322. NINETEENTH CENTURY EUROPEAN THEOLOGY.—Protestant theology from Kant to Herrman together with representative British theologians. 3 units.
PROFESSOR CUSHMAN

330. THE CHURCH IN EUROPE SINCE 1800.—Emphasis is placed on the relation of the Church to the social, economic, and political life of Modern Europe. 3 units. PROFESSOR PETRY

331. THE SOCIAL MESSAGE OF THE EARLY AND MEDIEVAL CHURCH.—A study of the social teachings and contributions of the Christian Church prior to the Protestant Reformation. 3 units. (Not 1960-61) PROFESSOR PETRY

332. THE MEDIEVAL CHURCH.—Outstanding characteristics of the Medieval Church, emphasizing theory, polity, institutions, sacraments, and worship. 3 units.
PROFESSOR PETRY

334. CHURCH REFORMERS AND CHRISTIAN UNITY.—The work of such reformers as Marsilius of Padua, William of Ockham, Jean Gerson, Pierre d'Ailly, and Nicholas of Cusa in relation to ecclesiastical schism and the search for Christian unity through representative councils. 3 units. (Not 1960-61) PROFESSOR PETRY

336. CHRISTIAN MYSTICISM IN THE MIDDLE AGES.—Source studies, in historical perspective, of such late medieval mystics as Bernard of Clairvaux, the Victorines, Ramon Lull, Meister Eckhart, Richard Rolle, Catherine of Siena, and Nicholas of Cusa. 3 units. PROFESSOR PETRY

337. THE THEOLOGY OF MARTIN LUTHER. (See Divinity Bulletin for course statement.) ASSISTANT PROFESSOR HILLERBRAND

339. LEFT-WING MOVEMENTS OF THE REFORMATION.
ASSISTANT PROFESSOR HILLERBRAND

370. SEMINAR: JONATHAN EDWARDS.—A critical analysis of Edwards' major theological works. 2 units. PROFESSOR SMITH

387. CHRISTIAN ETHICS AND SOCIAL PHILOSOPHY.—Selected social philosophies from Locke to Sumner analyzed from the standpoint of Christian ethics. 3 units. ASSOCIATE PROFESSOR RANSON

391. HISTORICAL TYPES OF CHRISTIAN ETHICS I.—A critical study of representative statements of Christian ethical theory, through the early Reformation. 3 units. (Not 1960-61) PROFESSOR BEACH

392. HISTORICAL TYPES OF CHRISTIAN ETHICS II.—A continuation of C.E. 391, from the Reformation through current Christian ethical theory. Prerequisite: C.E. 391. 3 units. (Not 1960-61) PROFESSOR BEACH

395. CHRISTIAN THOUGHT IN COLONIAL AMERICA.—Exposition of the main currents in Protestant Theology. 3 units. PROFESSOR SMITH

396. CHRISTIAN THOUGHT IN NINETEENTH-CENTURY AMERICA.—Comparative study of Orthodoxy and Liberalism. 3 units. PROFESSOR SMITH

FIELD III. SYSTEMATIC AND CONTEMPORARY STUDIES

320. SEMINAR: FRIEDRICH SCHLEIERMACHER.—Critical examination of the dogmatic system. 2 units. PROFESSOR CUSHMAN

325. PHILOSOPHICAL THEOLOGY I.—Main problems in the history of philosophical theology. 3 units. PROFESSOR CUSHMAN

326. PHILOSOPHICAL THEOLOGY II.—Prolegomena to the system of Christian Theology. 3 units. (Not 1960-61) PROFESSOR CUSHMAN

328. TWENTIETH-CENTURY EUROPEAN THEOLOGY.—Critical examination of the thought of selected representative theologians. 3 units.
ASSOCIATE PROFESSOR HERZOG

372. SEMINAR: PAUL TILLICH.—An examination of Tillich's philosophical theology. 2 units. (Not 1960-61) PROFESSOR SMITH

380. EXISTENTIALISM.—3 units. ASSOCIATE PROFESSOR WILLIAM H. POTEAT

389. CHRISTIAN ETHICS AND CONTEMPORARY CULTURE.—A study of the interaction between Christian thought and current secular social theory. 3 units. PROFESSOR BEACH

390. CURRENT PROBLEMS IN CHRISTIAN ETHICAL THEORY.—A critical study of dominant issues in Christian ethics, through an analysis of a variety of contemporary Christian treatments of such problems as love, justice, community, and vocation. 3 units. PROFESSOR BEACH

393. THE CHRISTIAN INTERPRETATION OF HISTORY.—A comparative examination of the chief secular and Christian theories of history current in Western thought. 3 units. PROFESSOR BEACH

394. CHRISTIANITY AND THE STATE.—The relation of the Christian theory of the State to political problems, with special consideration of the religious assumptions underlying democratic theory and practice and of the relationship of church to state. 3 units. (Not 1960-61) PROFESSOR BEACH

397. CONTEMPORARY AMERICAN THEOLOGY.—Critical appraisal of major tendencies. 3 units. PROFESSOR SMITH

ROMANCE LANGUAGES

PROFESSOR DAVIS, CHAIRMAN—214 CARR; PROFESSOR PREDMORE, DIRECTOR OF GRADUATE STUDIES—201 CARR BUILDING; PROFESSORS CASTELLANO, DOW, JORDAN, AND WALTON; ASSOCIATE PROFESSORS CHERPACK, CORDLE, AND FEIN; ASSISTANT PROFESSORS GRANT AND VINCENT

The Department of Romance Languages offers graduate work leading to the A.M. and Ph.D. degrees. In order to undertake graduate study in this Department, the student should normally have credit for four years of college courses in the chosen language, or 18 semester hours beyound the conventional two units offered at entrance to college. In addition to this minimum requirement, the student should have had one semester of review in composition and grammar.

It is recommended that candidates for the A.M. degree take a second Romance language as the minor subject.

A candidate for the Ph.D. degree should be equipped to follow graduate courses in a second Romance language. For this degree some training in Romance linguistics will be required, the amount to be determined by the Department upon consideration of the student's preparation in the field.

FRENCH

FOR SENIORS AND GRADUATES

213. FRENCH CLASSICISM.—Its initial phase. Reading from Malherbe, Balzac, Voiture, Descartes, Corneille, Moliére, and others. 3 units. (1960-61)
PROFESSOR WALTON

214. FRENCH CLASSICISM.—Its maturity. Readings from Pascal, Racine, La Fontaine, La Rochefoucauld, Boileau, Bossuet, Madame de Sévigné, La Bruyére, Saint-Simon, and others. 3 units. (1960-61) PROFESSOR WALTON

215, 216. THE MODERN FRENCH NOVEL.—A survey of the novel form from the seventeenth to the twentieth century, with particular attention to the analysis of fundamental literary trends; classicism, rationalism, romanticism, and realism. 6 units. (Not 1960-61) PROFESSOR JORDAN

219, 220. OLD FRENCH LANGUAGE AND LITERATURE.—Reading and discussion of representative texts of the Medieval Period accompanied by a study of the evolution of the language. 6 units. (1960-61)
ASSISTANT PROFESSOR VINCENT

221. THE NINETEENTH CENTURY FRENCH NOVEL.—Its initial phase. The Romantic hero in conflict with society, with special emphasis on the works of Stendhal and Balzac. 3 units. (Not 1960-61) ASSISTANT PROFESSOR GRANT

222. THE NINETEENTH CENTURY FRENCH NOVEL.—Its continuation. The decline of the individual hero. Flaubert and Zola will receive intensive study. 3 units. (1960-61) ASSISTANT PROFESSOR GRANT

227. FRENCH POETRY SINCE THÉOPHILE GAUTIER.—Readings from the principal figures of the Parnassian and Symbolist movements, including Baudelaire, Leconte de Lisle, Heredia, Verlaine, Rimbaud, Mallarmé and Régnier. 3 units. (Not 1960-61) PROFESSOR WALTON

238. ANATOLE FRANCE.—An analysis of the principal phases of his work and its relation to the French tradition. Reading of his poetry, *Le Crime de Sylvestre Bonnard, Thais, Le Jardin d'Epicure, Les Dieux ont Soif, Le Lys Rouge, L'Ile des Pingouins,* parts of *La Vie Littéraire.* 3 units. (Not 1960-61)
PROFESSOR WALTON

241, 242. FRENCH LITERATURE AND THOUGHT IN THE AGE OF ENLIGHTENMENT.—First semester: The new philosophy and its propagation. Lectures and discussions involving texts by Fontenelle, Montesquieu, Voltaire, Rousseau, Diderot, and others. Second semester. The crisis in literary aesthetics. Readings, lectures, and discussions bearing on the clash between Classicism and new literary orientations. 6 units. (1960-61) ASSOCIATE PROFESSOR CHERPACK

FOR GRADUATES

245. FRENCH LITERATURE OF THE TWENTIETH CENTURY.—1895-1925: the metamorphoses of Symbolism (Proust, Gide, Claudel). Extensive readings from the varied works of the three writers. 3 units. (Not 1960-61)
ASSOCIATE PROFESSOR CORDLE

246. FRENCH LITERATURE OF THE TWENTIETH CENTURY.—1925-1955: The Existentialist conversion (Malraux, Sartre, Camus). Extensive readings from the varied works of the three writers. 3 units. (1960-61)
ASSOCIATE PROFESSOR CORDLE

311, 312. FRENCH SEMINAR.—Each semester one of the following topics will be selected for intensive treatment: (a) Studies in Sixteenth Century Literature, (b) Studies in Eighteenth Century Literature, (c) Studies in Realism and Naturalism, (d) Studies in Nineteenth Century Criticism, (e) Studies in Contemporary Literature. 3 units each semester.*
PROFESSORS JORDAN AND WALTON; ASSOCIATE PROFESSOR CHERPACK

—. GRADUATE READING COURSE. An intensive course in French to develop rapidly the ability to read French in several fields. Graduate students only. No credit.

SPANISH

FOR SENIORS AND GRADUATES

255. MODERN LATIN AMERICAN LITERATURE.—The coming of age of Latin American literature in the nineteenth and twentieth centuries, with particular attention to the Modernist movement. 3 units. (Not 1960-61)
ASSOCIATE PROFESSOR FEIN

256. CONTEMPORARY LATIN AMERICAN LITERATURE.—Trends in Latin American literature after the Modernist movement. Analysis of significant works in various genres. 3 units. (1960-61) ASSOCIATE PROFESSOR FEIN

257. OLD SPANISH LANGUAGE.—The historical development of the language together with illustrative readings. 3 units. (1960-61) PROFESSOR DAVIS.

258. OLD SPANISH LITERATURE.—The literature of the Middle Ages and Early Renaissance. 3 units. (Not 1960-61) PROFESSOR DAVIS

260. ADVANCED COMPOSITION AND SYNTAX.—Study of fundamental difficulties in the language; practice in writing idiomatic Spanish; exercises in free composition. For students who have a satisfactory command of Spanish grammar and fair conversational ability. 3 units. PROFESSOR CASTELLANO

261. NINETEENTH CENTURY NOVEL.—A study of literary and social trends in the last half of the nineteenth century. Readings will be selected from the novels of Valera, Pereda, Galdós, Pardo Bazán, Blasco Ibáñez, and their contemporaries. 3 units. (1960-61) PROFESSOR DAVIS

264. MODERN AND CONTEMPORARY SPANISH THEATER.—A brief review of modern and contemporary Spanish Theater from the period of Romanticism. Lectures, reading and discussion of the most representative works of Benavente, los hermanos Quintero, Garcia Lorca, Casona, etc. 3 units. (1960-61) PROFESSOR CASTELLANO

265. GOLDEN AGE LITERATURE: CERVANTES.—The life and thought of Cervantes with special emphasis on his *Quijote*. 3 units. (1960-61) PROFESSOR PREDMORE

266. GOLDEN AGE LITERATURE: THE DRAMA.—Study of the chief Spanish dramatists of the seventeenth century with readings of representative plays of this period. 3 units. (Not 1960-61) PROFESSOR CASTELLANO

275. CONTEMPORARY SPANISH LITERATURE.—The essay and Lyric Poetry. A study of the revision of national values and literary expression in the twentieth century with particular reference to the crisis of 1898 and to the enrichment of the Spanish tradition through extra-peninsular influences. 3 units. (Not 1960-61) PROFESSOR PREDMORE

276. CONTEMPORARY SPANISH LITERATURE.—The Novel. A study of tradition and innovation in the twentieth-century Spanish novel with emphasis on the novels of Unamuno, Baroja, Valle Inclán, and Pérez de Ayala. 3 units. (Not 1960-61) PROFESSOR PREDMORE

FOR GRADUATES

321, 322. HISPANIC SEMINAR.—Each semester one of the following topics will be selected for intensive treatment: (a) The Spanish Language in America, (b) Studies in Medieval Literature, (c) Studies in the Literature of the Golden Age, (d) Studies in the Latin American Literature. 3 units each semester.* PROFESSORS CASTELLANO, DAVIS, AND PREDMORE; ASSOCIATE PROFESSOR FEIN

THE TEACHING OF ROMANCE LANGUAGES

218. EVALUATION OF OBJECTIVES AND METHODS.—A study of the practical problems involved in teaching on the elementary, secondary, and college levels. Analysis of textbooks, special foreign language programs, audio-visual aids. Critical examination of modern techniques of written and oral testing. 3 units. PROFESSOR DOW

RUSSIAN

ASSISTANT PROFESSOR JEZIERSKI

No graduate degree is presently offered in Russian. The following courses may serve in the minor programs of students in other departments.

201, 202. THE NOVELISTS OF NINETEENTH-CENTURY RUSSIA.—Development of the Russian novel against the European background, with emphasis on Dostoevskij and Tolstoj. Extensive readings in English. Lectures, oral reports, class discussions and term paper. 6 units. ASSISTANT PROFESSOR JEZIERSKI

SOCIOLOGY AND ANTHROPOLOGY

PROFESSOR MCKINNEY, CHAIRMAN—215D SOCIAL SCIENCE BUILDING; ASSOCIATE PROFESSOR KERCKHOFF, DIRECTOR OF GRADUATE STUDIES—215E SOCIAL SCIENCE BUILDING; PROFESSORS LA BARRE AND THOMPSON; ASSOCIATE PROFESSORS BACK, PREISS, ROY, AND SMITH

The Department offers graduate work leading to the A.M. and Ph.D. degrees. Before undertaking advanced work in this department, a student must have completed a minimum of twelve semester hours of approved preliminary courses in the field, and twelve additional semester hours in the field or in related work. A student who is deficient in the minimum required work will be asked to take additional undergraduate courses agreed upon in conference with the Director of Graduate Studies.

Areas of concentration within the department are: theory, methods and statistics, complex social systems, social organization and institutions, social psychology, and anthropology. The student's program of study will be distributed among these areas as determined through consultation with the Director of Graduate Studies and the student's supervisory committee.

Candidates for advanced degrees in sociology usually take minor work in psychology, economics, political science, mathematics, philosophy, or education. Detailed requirements for the minor work, and for majors in other departments who wish to present sociology as minor work, may be obtained from the Director of Graduate Studies.

FOR SENIORS AND GRADUATES

232. PRIMITIVE RELIGION.—The ethnography, the social functions, and the socio-psychological meanings of religion in primitive societies. 3 units. (Formerly 212) PROFESSOR LA BARRE

234. PERSONALITY AND SOCIETY.—The sociology and social psychology of human personality, its origins in the primary group, its nature and varieties and its integrations into secondary group insitutions. 3 units. (Formerly 213) PROFESSOR LA BARRE

236. PERSONALITY AND CULTURE.—The influence of culture patterns and social institutions upon character structure, socialization of the individual, and the dynamics of human personality. Comparative anthropological materials will be drawn upon. Prerequisite: Course 234. 3 units. (Formerly 214) PROFESSOR LA BARRE

241. SOCIAL STRATIFICATION.—The nature of hierarchical and vertical differentiation in the economic, political and prestige structures in modern societies. The interrelationship of class, status and power strata and their influence on social institutions, personality structure, and group and individual behavior. 3 units. ASSOCIATE PROFESSOR ROY

242. THE SOCIOLOGY OF OCCUPATIONS AND PROFESSIONS.—The social significance of work. Analysis of forces changing the contemporary occupational structure, typical career patterns of professions and occupations, the social organization of occupational groups. 3 units. (Formerly 158) PROFESSOR MCKINNEY

247. COMMUNITY AND SOCIETY.—This course seeks to provide a frame of reference for the analysis and ordering of facts pertaining to the diverse cultures of the world, the State, the world community, the Great Society, news, mass behavior, social problems, races and classes. 3 units. (Formerly 237) PROFESSOR THOMPSON

253. SOCIAL INSTITUTIONS.—The study of particular institutions and the social movements out of which they developed, with emphasis on the development of general propositions concerning the nature, function and importance of institutions in society. 3 units. PROFESSOR THOMPSON

255. RACE AND CULTURE.—A comparative study of race relations in world perspective developed around such themes as race and personal identity, the geography and ecology of race relations, the idea of race, and race conflict. 3 units. (Formerly 238) PROFESSOR THOMPSON

275. SOCIAL ATTITUDES AND INDIVIDUAL BEHAVIOR.—The importance of symbolic interaction, the development of the "self," the social structuring of the socialization process, individual movement within the social structure, and the importance of membership groups and reference groups. 3 units.
ASSOCIATE PROFESSOR KERCKHOFF

281. DEVELOPMENT OF SOCIOLOGICAL THEORY.—An analysis of the development, convergence and utilization of sociological theory. Prerequisite: 15 s.h. credit in sociology. 3 units. PROFESSOR MCKINNEY

282. PRINCIPLES OF SOCIOLOGICAL ANALYSIS.—An advanced course in general sociology designed to give a systematic conception of social order, focusing on its structural components and the functions they serve. Undergraduates must have at least 15 s.h. and a B average in sociology and have the permission of the instructor. 3 units. PROFESSOR THOMPSON

290-291. METHODS OF SOCIOLOGICAL RESEARCH.—Issues involved in establishing and testing scientific propositions; the nature and relationship of concepts, hypotheses, theories and laws; and general principles of research design. Techniques such as sampling, observation, interviewing, data processing and analysis are learned through study and practice. This is a professional course intended primarily for graduate majors. Undergraduates who have at least 15 s.h. and a B average in sociology may be admitted by permission of the instructor. 6 units. ASSOCIATE PROFESSOR SMITH

296, 297. STATISTICAL ANALYSIS IN SOCIOLOGY.—Such techniques as zero and higher order linear and curvilinear correlation, partial correlation, analysis of variance and covariance and factorial design are studied. Where possible, analagous non-parametric techniques are also considered. Prerequisite: 192 or its equivalent, 296 is prerequisite to 297. Undergraduates must have at least 15 s.h., a B average in sociology and obtain the permission of the instructor. 6 units.
ASSOCIATE PROFESSORS KERCKHOFF AND SMITH

FOR GRADUATES

330. SEMINAR IN ANTHROPOLOGY.—A seminar for advanced students who wish to pursue individual studies in racial and cultural anthropology. Offered both semesters. 1 to 3 units each semester. PROFESSOR LA BARRE

341. SPECIAL PROBLEMS OF COMPLEX SOCIAL SYSTEMS.

(a) INDUSTRIAL AND PROFESSIONAL SYSTEMS.—Analysis of problems of organization of work in such diverse settings as industrial plants, hospitals, and public administration groups. Problems of decision-making, recruitment, allocation of authority, informal organization, interorganizational relations. 3 units.
PROFESSOR MCKINNEY AND ASSOCIATE PROFESSOR ROY

(b) MASS COMMUNICATIONS.—Theoretical problems in defining and distinguishing communication, communicative acts, communication processes, and communication systems. Work aimed toward the derivation of models and theories for each of these will be pursued. Students must have permission of the instructor or have had at least 6 units in some of the following courses: 142, 171, 172, 275, 373, 374. 3 units. ASSOCIATE PROFESSOR SMITH

(c) URBAN SOCIETY.—Analysis is made of the varying mechanisms through which urban society is integrated, how urbanites develop a sense of identification with the community, and the extent and mode of social dominance of the city in the larger society. 3 units.
PROFESSOR THOMPSON AND ASSOCIATE PROFESSOR SMITH

(d) HUMAN ECOLOGY.—An examination of such issues as: the logic and utility of the ecological approach; the possibility of testing current ecological theories in non-western, non-urban environments; alternative explanations for the spatial patterning of social phenomena; selected methodological problems. 3 units. (Not 1960-61)
PROFESSOR THOMPSON AND ASSOCIATE PROFESSOR SMITH

351, 352. SEMINAR IN SOCIAL ORGANIZATION.—Examination of such problems as the bases of social cohesion and continuity, the sources and effectiveness of social control mechanisms, the problem of social change in structural-functional theory. 6 units. PROFESSOR MCKINNEY AND THOMPSON

373, 374. SOCIAL PSYCHOLOGICAL ISSUES IN SOCIOLOGY.—Detailed exploration of selected problem areas such as the theory and measurement of social attitudes, role discontinuity and personality disorders, applications of reference group theory, the socialization process. Students must have permission of the instructor or have had at least 6 units in some of the following courses: 142, 171, 172, 275, 341b. 6 units. ASSOCIATE PROFESSORS BACK AND KERCKHOFF

385, 386. SEMINAR IN SOCIOLOGICAL THEORY.—Detailed analysis of methodological and substantive problems in utilizing comprehensive, middle-range, and discrete theories in varied sociological areas. Major emphasis on the use of theory in empirical research. Open to students who have had 281 or its equivalent. 6 units. PROFESSOR MCKINNEY AND ASSOCIATE PROFESSOR PREISS

397, 398. SEMINAR IN SPECIAL RESEARCH PROBLEMS.—Advanced students will be given the opportunity to take intensive work on such topics as sampling plans, development of research designs from statistical models, experimental techniques, the relation of theory to research. Open to students who have had 290-291 and 296, 297 or their equivalent or by permission of the instructor. 6 units. ASSOCIATE PROFESSORS BACK, SMITH, AND KERCKHOFF

ZOOLOGY

PROFESSOR WILBUR, CHAIRMAN—224 BIOLOGY BUILDING; PROFESSOR HORN, ACTING DIRECTOR OF GRADUATE STUDIES—06 BIOLOGY BUILDING; PROFESSORS BOOKHOUT, GRAY, GREGG AND K. SCHMIDT-NIELSEN; ASSOCIATE PROFESSORS BAILEY, FLUKE, HUNTER, LIVINGSTONE AND ROBERTS; ASSOCIATE RESEARCH PROFESSOR B. SCHMIDT-NIELSEN; ASSISTANT PROFESSORS KLOPFER, SANDEEN, VERNBERG AND WARD

To undertake study toward an advanced degree in zoology a student should have completed an undergraduate major in zoology or its equivalent. This normally amounts to twenty-four or more hours of course work distributed among various fields of zoology, and must include comparative vertebrate anatomy or vertebrate zoology, embryology, and physiology. At least a year of chemistry is required. Physics is recommended. Candidates for the doctorate will be expected to have had not less than two years of chemistry and a year of botany. For some phases of zoology, organic chemistry is essential.

Required work for the A.M. ordinarily includes 18 units of advanced course work in zoology, six units of course work in a minor department, and an acceptable thesis.

Candidates for the Ph.D. degree are expected to be broadly trained zoologists. The program of each candidate is determined by a committee which reviews previous training and sets specific requirements to be met. Normally the program includes one or more graduate courses in each of several fields of zoology; courses in a minor subject; wide reading in science in general and in biology in particular; research; and a dissertation based on original work. A first draft of the thesis must be submitted to the major professor by March 15 of the year in which the degree is to be conferred.

FOR SENIORS AND GRADUATES

201. ANIMAL BEHAVIOR.—A review of the major developments in the field with emphasis on recent physiological and developmental studies. Prerequisites: Physiology, Genetics and Evolution, or permission of the instructor. 3 units. (1960-61) ASSISTANT PROFESSOR KLOPFER

203. ECOLOGY.—Relation of animals to environment. Lectures, reading, reports, conferences; laboratory and field work. 4 units. PROFESSOR GRAY

204. ADVANCED PARASITOLOGY.—Lectures, conferences, readings, and laboratory work dealing with practical and theoretical problems of classification, morphology, and host relations of animal parasites. Prerequisite: Zoology 161 or equivalent. 4 units.* ASSOCIATE PROFESSOR HUNTER

210. EXPERIMENTAL GENETICS.—The relationship of phenotype to genome and environment; cytogenetics, recent research in the field of genetics. Laboratory. Prerequisites; Principles of heredity (one of the following: Zoology 110, Botany 101, 202, or equivalent) or consent of instructor. 4 units. (1960-61)
ASSISTANT PROFESSOR WARD

216. LIMNOLOGY.—A study of lakes, ponds, and streams, including their origin, development, geochemistry, energy balance, productivity, and the dynamics of the plant and animal communities living in them. Lectures, field trips, laboratory work. Prerequisites: Chemistry 1 and 2, Physics 1 and 2, Mathematics 51, and one year of biology; or permission of instructor. 4 units. (Not 1960-61)
ASSOCIATE PROFESSOR LIVINGSTONE

222. ENTOMOLOGY.—Anatomy, physiology, embryology, and classification of insects. Prerequisite: one year of zoology. 4 units.* PROFESSOR GRAY

224. VERTEBRATE ZOOLOGY.—A study of the life histories, adaptations, ecology, and classification of vertebrate animals. Prerequisite: Zoology 53. 4 units. (Not 1960-61) ASSOCIATE PROFESSOR BAILEY

228. EXPERIMENTAL EMBRYOLOGY.—Lectures, readings, reports, and laboratory work. Prerequisites: Zoology 53, 92, 156, 271, or equivalent. 4 units. (Not 1960-61) PROFESSOR GREGG

238. SYSTEMATIC ZOOLOGY.—The fundamental theory and practice involved in the collection, identification, and classification of animals. Prerequisite: Zoology 1 and 2. 4 units. (1960-61) ASSOCIATE PROFESSOR BAILEY

243. CYTOLOGY.—The structure of the cell. Lectures, readings, reports, and laboratory work. Prerequisites: Zoology 53, 92, 156, or equivalent. 4 units. (1960-61) ASSOCIATE PROFESSOR ROBERTS

245. RADIATION BIOLOGY.—An introductory course which deals with the basic physical, chemical, and biological principles upon which the study of the biological effects of radiation is based. Laboratory work and lectures. Prerequisites: mathematics through trigonometry, college physics, inorganic and organic chemistry. 4 units. (1960-61) ASSOCIATE PROFESSOR FLUKE

249. PHYSIOLOGY OF INVERTEBRATE RECEPTORS, EFFECTORS, AND COORDINATION.—A study of sense organs, endocrine and nervous mechanisms, muscles, chromatophores and other effectors in selected invertebrate animals. Lectures, reports and laboratory. Prerequisites: 2 years of Zoology, 1 year of Chemistry, 1 year of Physics (may be taken concurrently). 4 units. (1960-61)
ASSISTANT PROFESSOR SANDEEN

252. COMPARATIVE PHYSIOLOGY.—The physiological mechanisms of animals studied on a comparative basis. Prerequisite: Zoology 151 or equivalent. 4 units.
PROFESSOR SCHMIDT-NIELSEN

253. ADVANCED VERTEBRATE MORPHOLOGY.—Descriptive and experimental studies in comparative vertebrate morphogenesis. Lectures, readings, reports, and laboratory. Prerequisites: Zoology 53, 92. 4 units. (1960-61)
PROFESSOR HORN

271. CELLULAR PHYSIOLOGY.—The physiological processes of living matter approached through studies of cells. Prerequisites: two years of biology and at least one year of chemistry. 4 units. PROFESSOR WILBUR; ASSOCIATE RESEARCH PROFESSOR B. SCHMIDT-NIELSEN

274. INVERTEBRATE ZOOLOGY.—A study of structure, functions, and habits of invertebrate animals under normal and experimental conditions. Field trips will be made to study, collect, and classify animals in their natural habitats. Prerequisites: Zoology 1 and 2. 4 units.* PROFESSOR BOOKHOUT

276. PROTOZOOLOGY.—The morphology, physiology, taxonomy, and culture of protozoa. Prerequisites: Zoology 1 and 2. 4 units. (1960-61)
PROFESSOR BOOKHOUT

278. INVERTEBRATE EMBRYOLOGY.—Lectures, readings, and laboratory work dealing with rearing, development, and life history of invertebrates. Prerequisite: Zoology 92. 4 units.*
PROFESSOR BOOKHOUT

FOR GRADUATES

307. FOUNDATIONS OF ZOOLOGY.—Lectures, readings, and discussions on the background and training essential for a professional zoologist. 2 units.*
ALL MEMBERS OF THE GRADUATE STAFF

345. MOLECULAR BIOLOGY.—Physical evidence for sub-cellular structure for proteins and other macromolecules in living processes. Genetic chemistry in virus and other microbiological replication, energy transfer and information concepts. Prerequisites: college physics and algebra, genetics, organic chemistry, and biochemistry (may be concurrent). 3 units. ASSOCIATE PROFESSOR FLUKE

351, 352. DEPARTMENTAL SEMINAR.—A weekly meeting of graduate students and faculty to hear reports and to discuss biological facts, theories, and problems. One hour a week throughout the year. 1 unit credit by arrangement.
ALL MEMBERS OF THE GRADUATE STAFF

353, 354. RESEARCH.—Students who have had proper training may carry on research under direction of members of the staff in the following fields: (a) Embryology, (b) Physiology, (c) Histology, Cytology, (d) Invertebrate Zoology, Invertebrate Embryology, (e) Ecology, Entomology, Vertebrate Zoology, (f) Vertebrate Morphology and Morphogenesis, (g) Parasitology, (h) Vertebrate Zoology, Systematic Zoology, (i) Limnology, Oceanography, (j) Ecology, (k) Genetics, (l) Biophysics, (m) Animal Behavior. Hours and credits to be arranged.
ALL MEMBERS OF THE GRADUATE STAFF

355, 356. SEMINAR.—One or more seminar courses in particular fields are given each semester by various members of the staff. These will be in the fields indicated under courses 353-354 above. 2 units.

MARINE LABORATORY. The following courses will be given at Duke University Marine Laboratory, Beaufort, N. C. during the summer of 1960: S203, Marine Ecology; S250, Physiological Ecology of Marine Animals; E274 Marine Invertebrate Zoology.

GRADUATE CREDIT FOR COURSES TAKEN IN THE SCHOOL OF LAW

Upon the recommendation of the Director of Graduate Studies, and upon the approval of the Dean of the Graduate School, students in the Social Sciences may take certain courses in the School of Law for graduate credit. In exceptional instances courses in the School of Law may be considered as fulfilling a student's requirements for a minor.

MEDICAL SCHOOL

The facilities of the several Departments of the Medical School listed alphabetically as departments are available to qualified graduate students, already admitted to the Graduate School, for independent or supervised research and investigation, whether or not they are working toward advanced degrees.

Graduate students wishing to pursue a major or minor in any of these departments should consult or write the appropriate Director of Graduate Studies.

Because of the special schedules maintained in the Medical School, graduate students should write the Directors to ascertain the precise dates when courses are offered.

GRADUATE CREDIT FOR STUDENTS SPECIALIZING IN PHYSICAL THERAPY

Students specializing in physical therapy may request admission in the Graduate School and if admitted receive graduate credit for the graduate courses in anatomy, physiology, and psychology. Later they may complete their work for the Master of Arts degree in anatomy or physiology. (See above.) The graduate courses required in this program are Anatomy M201, 6 units and Physiology M203, 6 units. To complete the major for the Master of Arts degree, selection may be made from the following courses: Anatomy M203, 4 units; Anatomy M205, 2 units; Zoology 271, 4 units; Physiology M372, 2 or more units. For information concerning the Physical Therapy program write Miss Helen Kaiser, Director, Physical Therapy Department, Box 3247, Duke University Medical Center.

THE DIVINITY SCHOOL

Fall Semester begins September 22, 1960

Spring Semester begins February 1, 1961

General Information

HISTORICAL STATEMENT

THE Indenture of Trust signed on December 11, 1924, by Mr. James B. Duke, which established Duke University, mentioned first among its objects the training of ministers of the Gospel. The Divinity School was, accordingly, the first of the graduate professional schools to be organized. Its work began with the year 1926-27, the formal opening exercises being held on November 9, 1926.

The Reverend Doctor Edmund Davison Soper was the first Dean of the Divinity School. He resigned in 1928 to become President of Ohio Wesleyan University, and was succeeded by the Reverend Doctor Elbert Russell, and the latter in turn in 1941 by the Reverend Doctor Paul Neff Garber. In 1944, Dean Garber was elected to the episcopacy of the Methodist Church, and Doctor Harvie Branscomb assumed the duties of the Dean's office. In 1946, Dean Branscomb became Chancellor of Vanderbilt University, and in 1947 the Reverend Doctor Paul E. Root was elected Dean but died before he could assume the office. The Reverend Doctor Harold A. Bosley became Dean in 1947 and resigned in 1950 to become the pastor of the First Methodist Church, Evanston, Ill. The Reverend Doctor James Cannon was appointed Dean of the Divinity School March 1, 1951. After a period marked by important administrative integration of the School, Doctor Cannon resigned the duties of deanship, September 30, 1958. The Reverend Professor Robert Earl Cushman was elected Dean and assumed the responsibilities of the office October 1, 1958.

THE PURPOSE OF THE DIVINITY SCHOOL

The primary purpose of the Divinity School is to provide training for properly qualified persons planning to enter the Christian ministry. This includes not only prospective ministers in local churches, but also those preparing themselves to be missionaries at home and abroad, ministers of Christian Education, teachers of religion, and chaplains. Vital to all of these forms of service is a full understanding of the beginnings, content, and history of the Christian faith and its special pertinence for the spiritual needs of the modern world. Studies of a broad and thorough character directed toward such an understanding constitute the center of the curriculum of the Divinity School and are regarded as the basic training for all prospective Christian ministers. Specific instruction in the skills required of local ministers and of leaders in the work of Christian

Education is also provided. As funds become available for the purpose and as needs appear, additional training in specialized skills and areas of knowledge will be added to the curriculum.

Bound by ties of history and obligation to The Methodist Church, the Divinity School is ecumenical in its interests and outlook. Its faculty is limited to no one denomination, but draws upon the resources of them all. Students of the several denominations are admitted on the same basis. The Divinity School conceives its task to be one of broad service to the Church in all of its forms.

THE RELATION OF THE DIVINITY SCHOOL TO DUKE UNIVERSITY

The Divinity School is an integral unit of the University and shares fully in its activities, privileges, and responsibilities. The Sunday services in the University Chapel give Divinity School students an opportunity to hear each year a number of leading ministers of the country. The University Libraries make easily accessible a rich collection of 1,275,000 volumes. Selected courses in the Graduate School of Arts and Sciences and in the professional schools are open to Divinity School students without payment of additional fees. The general cultural and recreational resources of the University are available to them on the same basis as to other students.

LIBRARY RESOURCES

Detailed information concerning the resources of the Divinity School Library, religious and social life, and public lectures is given in the *Bulletin of the Divinity School.*

COURSES OF STUDY OFFERED BY THE DIVINITY SCHOOL

The Divinity School offers three courses of study. The basic course is that which leads to the degree of Bachelor of Divinity. This is a three-year course and is recommended to all those preparing themselves for the work of the parish ministry. Students who hold pastoral charges, or other remunerative work requiring any substantial time apart from their studies, may carry only reduced schedules of work, and, in most cases, unless work is taken in the Duke University Summer Session, will spend four years in completion of the requirements for the B.D. degree.

The Divinity School offers study leading to the degree of Master of Religious Education. This course is designed for persons who wish to take specialized positions in the work of Christian Education. The course does not provide a general preparation for the work of the regular ministry and cannot serve as a substitute for it. No exchange of credits between the two courses is permitted, nor can departmental courses taken be credited toward more than one degree.

A new program of study leading to the degree of Master of Theology (Th.M.) will be instituted in the academic year 1960-1961. This course is planned to afford a limited number of superior students an opportunity for intensive theological study beyond the B.D. degree. It is a terminal professional degree, ordinarily to be completed in a year, and not to be regarded as leading toward a doctorate.

COURSES OF STUDY IN RELIGION OFFERED BY THE GRADUATE SCHOOL OF ARTS AND SCIENCES

Students who desire to pursue studies in religion leading to the degrees of Master of Arts or Doctor of Philosophy in Religion should register in the Graduate School of Arts and Sciences. This advanced work is administered through the Department of Religion of the Graduate School and is available to qualified persons of all denominations on an equal basis. Study and research may be pursued in three fields: (1) Biblical Studies; (2) Historical Studies, and (3) Systematic and Contemporary Studies. A list of courses approved by the Graduate Faculty for work in these fields, together with general requirements for admission to the Graduate School, may be found in the *Bulletin of the Graduate School.* This Bulletin is available on application to the Dean of the Graduate School of Arts and Sciences, Duke University.

A limited number of University Scholarships and Fellowships, among which are four Gurney Harriss Kearns Fellowships, ranging from $1,600 to $2,000 may be obtained by exceptionally qualified students. Applications for these must be submitted to the Dean of the Graduate School on University forms not later than March 1 of each year.

Inquiries concerning specific requirements of the Department of Religion in the Graduate School should be addressed to Professor Waldo Beach, Director of Graduate Studies in Religion.

DEMPSTER GRADUATE FELLOWSHIPS

The Methodist Board of Education offers each year the Dempster Graduate Fellowships for graduates of Methodist Theological Schools, who are engaged in programs of study leading to the degree of Doctor of Philosophy in Religion with a view to teaching in Methodist colleges and seminaries. Several Divinity School graduates have held these fellowships.

FACILITIES FOR ADVANCED STUDY IN THE AMERICAN SCHOOLS OF ORIENTAL RESEARCH

The Divinity School of Duke University is one of the supporting members of the American Schools of Oriental Research. Accordingly, students in the Divinity School have the privilege of attending the

American School in Jerusalem or the one in Bagdad without charge for tuition. They may also compete for the financial aids which are offered annually by the Schools. These consist of four fellowships, the stipends depending upon available funds.

DIVINITY SCHOOL SEMINARS

The Divinity School, under provision of the James A. Gray fund, conducts each year two extension seminars providing two-day study courses for ministers. In 1959-60 seminars were conducted at the First Methodist Church of Salisbury, N. C. and the First Methodist Church of Wilson, N. C. Lecturers were Dr. William H. Kirkland, Professor of the Philosophy of Religion in McCormick Theological Seminary, the Reverend Gaylord B. Noyce, minister of the United Church, Raleigh, N. C., and Dr. Waldo Beach, Professor of Christian Ethics in the Duke Divinity School.

SCHOOL FOR APPROVED SUPPLY PASTORS

In cooperation with the Department of In-Service Training of the Board of Education and the Southeastern Jurisdictional Conference of the Methodist Church, the Divinity School conducts a School for Approved Supply Pastors of the Methodist Church. The School for 1960 is scheduled for July 18-August 12.

STUDENT GOVERNMENT ASSOCIATION

Each student of the Divinity School upon enrollment becomes a member of the Student Government. Four officers are elected annually in April to serve for the following year. These officers, the President, Vice-President, Secretary, and Treasurer, serve as the Executive Committee, and the committee chairmen constitute the Student Council, which meets in monthly session to review and coordinate the programs of the several committees. It is desired that students contribute to the corporate life of the School through active participation in the work of the committees. The Student Association operates on the basis of a unified budget, each student contributing to its support dues set by the Executive Committee, which for the past several years have been in the amount of $5.00 per year, payable at the time of fall registration; $2.50 at spring registration for students who enter at that time.

Student committees organize and supervise social projects and missions of preaching, jail visitation, and related enterprises. Opportunities for occasional preaching are always available.

STUDENT PUBLICATIONS

The Divinity School student body sponsors and publishes a faculty and student *Directory,* and a monthly paper entitled, *Response.*

DIVINITY DAMES

The wives of Divinity School students have an organization through which there is opportunity for informal fellowship during the period of the students' residency. For the past several years lecture courses, running for five-week periods in the fall and spring semesters, have provided instruction in various aspects of parish life and in theological and Biblical subjects and issues. The dean and faculty are concerned to assist the wife to understand her husband's vocation and to participate appropriately.

Admission and Requirements for Degrees

Requirements for Admission

THE Divinity School is a fully accredited member of the American Association of Theological Schools, and is one of twelve accredited seminaries of the Methodist Church. Candidates for admission must hold the degree of A.B., or its equivalent, based upon four years of work beyond secondary education, in a college which is approved by one of the regional accrediting bodies, and their college records must be such as to indicate their ability to carry on graduate professional studies. They will be admitted without examination on presentation of an official, satisfactory transcript of college and all other academic credits which they may have secured. Recommendations from five responsible persons are required. Women will be admitted on the same basis as men.

Applications may be rejected where transcripts show a considerable number of low grades even though the applicant may have eventually received a degree. Papers filed with applications are not returned.

It is desirable that each applicant for admission show a "B" average in his college work. An average of less than "B—" is, normally, not considered sufficient for admission.

The applications of students from foreign countries will be considered, each on its own merits, the general principle being that a training equivalent to that of a baccalaureate degree from an accredited American college must have been secured.

In addition to an adequate academic preparation, applicants must satisfy the Faculty as to their Christian character and purpose. A formal application blank may be secured from the office of the Divinity School. This must be filled out and returned by all candiates for admission. Application for admission should be made during the first semester of the applicant's senior year in college. Applications received after April 1 cannot be assured of admission, financial aid or dormitory rooms for the ensuing academic year. A minimum of thirty days is required to process any application.

All persons admitted to the Divinity School are required to report to the Student Health Service, Duke Hospital, for physical examination on days and at hours specified at the time of matriculation. No admission is final until approved by the Student Health Service, which may require submission of a health certificate prior to arrival of prospective students. Applicants are also required to take certain tests administered by the Bureau of Testing and Guidance.

Persons who do not matriculate at the time for which they were originally admitted forfeit admission and must be formally re-admitted A student who withdraws from the Divinity School and desires to return at a later date must file with the Dean a written request for a leave of absence.

The number of applications for admission to the School is considerably larger than the number of vacancies. In view of this fact, applicants are required on notification of admission to signify their acceptance within two weeks, and to pay an admission fee of $30.00 (Make check payable to Treasurer of Duke University and send to the Office of the Dean of the Divinity School.) This fee is applied to the regular first-term bill if the student matriculates; if he fails to do so, the fee is forfeited. This does not apply to the Summer Session.

Under the terms of the Selective Service Act, as it now stands, pre-enrollment for later formal admission may be granted to persons who meet the Divinity School standards and requirements for admission. Applications for pre-enrollment may be addressed to the Office of the Dean. Pre-enrolled students must send transcripts of each year's college work by June 15th of each year in which they are pre-enrolled. *Pre-enrollment does not guarantee final admission,* and a person who has been pre-enrolled for any length of time must send a transcript of work by February 1 of the year in which admission is sought for the ensuing academic year. This must be accompanied by a letter from the college dean or other approved reference certifying to continued academic acceptability, good character and conduct. The admission fee of $30.00 is due within two weeks of receipt of notice of final admission.

ADVANCED STANDING

Transfer of credit from theological schools recognized by the American Association of Theological Schools is provided for by the Faculty of the Divinity School under certain conditions. Applications for transfer of credit will be ruled upon by the Committee on Admissions, and will be subject to evaluation in terms of the prevailing requirements of the Divinity School for graduation. Ordinarily credit from another institution will not be granted in amount exceeding one half of the total credits required by the Divinity School for graduation. A student applying for transfer of credit in excess of this amount may be required to pass such examinations as the Committee on Admissions may prescribe. In each case a letter of honorable dismissal from the school from which transfer is made is required along with transcript of academic credits.

Entering students with exceptional undergraduate preparation, may seek advanced standing by substitution of advanced or specialized courses for certain required courses. *Petition for substitution must be submitted with the application for admission to the Committee on Admissions.* Courses for which substitution is sought must be specified. Provision is made during the orientation period for students who seek such substitution to take qualifying examinations. These may be taken in no more than three of the following areas:

(a) Old Testament
(b) New Testament
(c) Types of Religious Philosophy
(d) Speech

A student who has not less than three semester hours of college credit, with a grade of "B" or better in one or more of these areas *and* whose performance on the qualifying examination is satisfactory, may be permitted to satisfy the basic requirement by substituting an advanced or more specialized course in the same or cognate area.

For O.T. 11 (101, 196, 197, 201-102)
For N.T. 18 (103-104, 105, 109, 116, 217 or equivalent)
For Types of Religious Philosophy (16 Contemporary Western Culture)
For Ministerial Communication 17 (134, 178, 180) *

Unless all the work offered for the B.D. degree is completed within a period of nine years from the date of beginning, the student will be required to make formal application for re-admission and re-evaluation

* Students seeking permission to substitute a more advanced course for Ministerial Communication 17 must qualify by passing the Divinity School Platform Test under conditions described in the section stating requirements for the Bachelor of Divinity degree.

of his credits in the light of the then-existing curriculum of the Divinity School. Except in unusual cases, work of a fragmentary character taken over a long period of years, or work taken many years before a student is admitted to the Divinity School, will not be accepted for credit toward the B.D. degree.

ADMISSION ON PROBATION

1. Applicants for admission who are graduates of non-accredited colleges will be considered on their merits. Ordinarily, such applicants must show that they have attained a superior average for a four-year college course.

Admission of such persons will, in every case, be *on probation.*

2. Applicants for admission who are graduates of accredited colleges but whose college transcripts do not fully meet Divinity School standards may also be admitted *on probation* if their recommendations justify consideration.

Probation means:

a. Students who, during the first year of Divinity School work (thirty semester hours), maintain a low average, including one or more failures, will be required to withdraw from the school.

b. Students admitted on probation may carry only limited schedules of work, the amount to be determined by the Dean of Students.

c. In the case of a student admitted on probation, no credit will be granted for any course in which, during the first year's work (thirty semester hours), a grade of less than "C" is recorded, unless the student's entire average in the year during which a "D" grade is received is "C" or better.

d. When the student has been admitted on probation, and is subsequently found to be deficient in the essential requisites of any given area of the "Pre-Seminary Curriculum" (see next section of catalogue), the Divinity School Faculty reserves the right to direct that the student make up such deficiencies by additional courses of study taken in other schools of Duke University in order to qualify for either the B.D. or M.R.E. degree, but without credit for such courses toward those degrees.

Students whose work after admission is not satisfactory may be placed on probation for one or more semesters and may be denied credit for courses in which "D" grades are recorded.

PRE-SEMINARY CURRICULUM

The Divinity School, in substantial agreement with the standards of the American Association of Theological Schools, recommends that prospective candidates for admission keep in mind the desirability of including the following in their undergraduate curriculum:

It is suggested that a student should acquire a total of 90 semester hours or complete approximately three-fourths of his college work in the areas listed below. No work done towards a first college degree may be used toward a Divinity School degree.

Basal Fields	*Semesters* (At least the number indicated)
English Literature, composition and speech, and related studies	6
History, ancient, modern European, and American	3
Philosophy, orientation in history, content and method	3
Religion	3
Psychology	1
A foreign language Greek, Latin, Hebrew, French and German are especially recommended.	4

Requirements for the Degree of Bachelor of Divinity

The requirements stated in Section I below apply to all students who entered the Divinity School after June 1, 1959.

(For those graduating under the catalogue of 1958-59 the catalogue of that year may be consulted or mimeographed statements are available in the Dean's Office.)

REQUIREMENTS FOR THE JUNIOR YEAR

I. Required Courses, to be taken by all candidates for the B.D. degree.

P.S. 10. I. The Church and the Minister's Vocation	2 s.h.
O.T. 11. Introduction to the Old Testament I	3 s.h.
C.H. 13. History of the Church to the Protestant Reformation	3 s.h.
C.H. 14. History of Modern European Christianity	3 s.h.
C.T. 16. Contemporary Western Culture	3 s.h.
(Alternate option for T.S. 20 if a student has had 6 hours of History of Philosophy and/or Philosophy of Religion in College.)	
Speech 17. Ministerial Communication	2 s.h.
N.T. 18. Early Christian Life and Literature	3 s.h.
T.S. 20. Types of Religious Philosophy	3 s.h.
H.T. 21. Theology of the Protestant Reformation	3 s.h.
P.C. 26. II. Introduction to Pastoral Care	3 s.h.
Field Work Practicum for Student Pastors	
Field Work Practicum for Endowment Students	

Professional Courses I and II required of all students.

REQUIREMENTS FOR THE MIDDLE YEAR

(New Program)

O.T. 12. Introduction to the Old Testament II	3 s.h.
N.T. 19. Introduction to New Testament Theology	3 s.h.
C.Ed. 22. IV Theology and Christian Nurture	3 s.h.
H.R. 24. Philosophy of the Christian World Mission	2 s.h.
C.E. 27. Christian Ethics I	3 s.h.
A.C. 28. History of American Christianity	3 s.h.
Pr. 29. III Sermon Construction—Theory	2 s.h.
Pr. 30. V Sermon Construction—Practice	2 s.h.
C.T. 32. Christian Theology I.	3 s.h.
C.T. 33. Christian Theology II.	3 s.h.

Note: Professional Course III, required of Vocational Groups 1, 3, 4.
Professional Course IV, required of all students in Vocational Groups 1, 2, 3.
Professional Course V, required of all students in Vocational Groups 1, 3, 4.
Philosophy of Christian World Mission required of Vocational Groups 1, 2, 3.

REQUIREMENTS FOR THE SENIOR YEAR

(New Program)

C.A. 23. VI The Care of the Parish	3 s.h.
Pr. 31. VIII Preaching (practice)	1 s.h.
W.C. 40. VII The Church at Worship	3 s.h.

Note: Professional course VI is required of students in Vocational Groups 1, 2, 3.
Professional course VII is required of students in Vocational Groups 1, 2, 4.
Professional course VIII is required of students in Vocational Group 1.
(Roman numerals show Vocational Groups for which the course is required)

II. Vocational Groups
Each student, not later than the end of the junior year, will choose one of the five Vocational Groups listed in the *Bulletin of the Divinity School* and will meet the vocational requirements of the group chosen.

III. Senior Seminars.
Each student will elect one of the Senior Seminars listed on page 298.

IV. Free Electives.
The student will choose a sufficient number of courses to make up the total of 90 semester hours required for graduation. Language courses count as free electives.

V. English Bible. Demonstration of a detailed knowledge of the contents of the narrative portions of the English Bible. Examinations for this purpose in Old and New Testament are given each spring. (See Calendar for exact dates.)

VI. The Platform Test. In addition to passing the course, Ministerial Communication 17, each candidate is required to pass a Platform Test, taken before a panel of at least three instructors of the faculty who are appointed by the Dean to evaluate student competence in public address and diction. The test includes oral reading from and verbal commentary on an assigned passage of scripture together with such other reading as may be assigned at the time of the test. The tests are scheduled by the Dean's office, normally at an early date in the Spring Semester. Students failing the Platform Test are assigned to a program for remedial speech. Speech 34 is provided as a practice speaking and reading workshop for cultivating correct English diction and providing experience in communication.

Students who show deficiencies in English will be required to take special training in addition to meeting the other requirements for the degree. A degree may be withheld on the grounds of English deficiency.

FACULTY ADVISORS

Each entering student is assigned to a Faculty Advisor at the time of registration and must report to his Advisor. A student must consult with his advisor in order to determine his course and cannot complete his registration without the signature of his advisor. It is understood

that all students will continue to consult their advisors at the time of registration throughout the period of their academic work.

ADMINISTERING THE CURRICULUM

For the administration of the curriculum the following regulations have been adopted:

Full-time students must take the required courses as specified for the respective semesters.

Students who hold pastoral appointments or act as associate pastors, or students with substantial responsibilities apart from and beyond academic work, may not enroll for more than eleven course hours in the first semester of the Junior year, nor for more than twelve hours in the second semester of the same year, nor for more than thirteen hours in any semester thereafter, except on recommendation of the Associate Dean of Students to the Dean. The schedules of all students are subject to review and approval of the Dean and the Committee on Academic Standing.

Ordinarily, a student enrolled in candidacy for the B.D. or M.R.E. shall enroll for no less than nine semester hours in any semester.

Not over 30 semester hours of Summer Session work may be credited toward the degree of Bachelor of Divinity.

The status of "special student" may not be granted simply to permit avoidance of the schedule of required courses. Every request for this classification will be carefully investigated and approval of the Dean is required.

A fee of $10.00 is charged for auditing any course except where a student is already paying regular University fees. Permission to audit requires the approval of the Dean and the instructor concerned.

Student pastors and students working under the Duke Endowment Summer Field Work program of the Rural Church, are required to take one of the Field Work Practicums.

LANGUAGE STUDY

For a student taking both Greek and Hebrew, the Greek may be continued in the second year by postponing one or both of the required courses in Old and New Testament. In such cases, the Hebrew will be the free elective in that year.

A student enrolled for six hours of language, N.T. 103-104, or O.T. 201-202, may be excused from one three-hour required course, either O.T. 12 or N.T. 19.

A part-time student who desires to begin the study of Greek in the first year may postpone the required course in Old or New Testament.

Suitable entry will be made on the permanent record of any stu-

dent who is granted permission to deviate from the requirements in the matter of language.

GRADUATION CREDITS

It is the responsibility of each student to see that he meets all requirements for graduation, and to take his courses in proper sequence. He is also responsible for seeing that any special permission granted him to deviate from the normal program is properly recorded in his personal file. Deviations from a normal academic program must be approved by the Associate Dean of Students as representative of the Dean of the Divinity School.

GRADING SYSTEM

The grading system of the Divinity School employs the letters A, B, C, D, and F, which have been defined as follows: A = Excellent; B = Superior; C = Average; D = Inferior; F = Failure; WP = Withdrew Passing; WF = Withdrew Failing; WI = Withdrew Illness and Inc. = Incomplete; P, Passed (satisfactory work in Field Work or M.R.E. Project). (See below.) No percentage equivalents are stated. A student is expected to maintain an average of C.

In all courses where the instructor considers attendance a necessary part of the work of the course, a student may not receive a grade of over C if his absences total 12% of the regular class periods, and if the absences total 24% of the class periods he may not receive credit for the course.

Grades of Incomplete received at the end of the fall semester must be removed by the completion of the work of the course not later than March 15. Grades of Incomplete received at the end of the spring semester must be removed by October 1. If the work of the course is not completed by these dates, the grades shall be recorded as "F." When an Incomplete is permitted it is only in cases where circumstances beyond the student's control are adjudged such as to permit extension of time limit for completion of the course.

No student shall be permitted to drop a course after the expiration of one-third of the period of instruction of the course without incurring failure, except for causes adjudged by the Dean to be beyond the student's control.

Requirements for the Degree of Master of Religious Education

The course of study leading to this degree is designed for persons desiring to engage in various forms of Christian Education.

Candidates for this degree must hold the degree of A.B. (or its equivalent), based upon four years of work beyond secondary educa-

tion, in a college which is approved by one of the regional accrediting bodies, and with academic and personal records which afford promise of competence in this area of service. The course of study will be especially useful for individuals who have had one or more years of experience in Christian Education and desire further training. Candidates for this degree will be limited in number, and individuals interested are urged to apply for admission well in advance of the opening of the academic year. All work offered for this degree, whether in the regular year or in summer sessions, must be completed within a period of six years from the date of beginning.

It is desirable that each applicant for admission show a "B" average in his college work. An applicant must show a college average of not less than "B—."

PREREQUISITES

Three of the following five prerequisite studies must have been taken by the candidate prior to his admission to the Divinity School or must be secured, without credit toward the M.R.E. degree, after being admitted:

General Psychology	3 s.h.
Sociology	3 s.h.
Education	3 s.h.
Philosophy	3 s.h.
Religion	3 s.h.

GENERAL REQUIREMENTS

Sixty semester hours of graduate-professional work are required for graduation. Not more than twelve semester hours of this work may be taken in approved summer sessions.

No credits are allowed for undergraduate courses. However, in approving plans of study leading to this degree, consideration will be given to earlier work taken in the fields of Biblical studies and Christian Education provided such courses were taken in the Junior and Senior years in accredited four-year colleges. Also where candidates for the degree have been engaged professionally as Directors of Christian Education for not less than twelve months prior to entering the Divinity School the amount of Field Work may, upon recommendation of the Director of the M.R.E. program and the approval of the Dean, be reduced to not less than six hours of Project or Directed Field Work during the period required for completing requirements for the degree.

A student who secures credit for 15 semester hours each semester will be in line for graduation at the end of two academic years. The amount of work allowed in each semester may not exceed that permitted in the B.D. curriculum.

COURSE REQUIREMENTS FOR THE M.R.E. DEGREE

Subject	*Required Semester Hours*
Biblical Studies (OT & NT)	9 to 12
Church History, Historical Theology and American Christianity	9 in two or more of these fields
Christian Theology	3 to 6
Philosophy of Religion or Christian Ethics	3
Worship	3
Pastoral Care	3
Christian Education (including missionary education)	11
Project	3
Required Hours	44 to 50
Electives	10 to 16
TOTAL	60

Requirements for the Degree of Master of Theology

The course of study leading to the degree of Master of Theology is designed for graduates of accredited theological schools who desire to continue or resume their theological education for enhancement of professional competence in selected areas of study. Enrollment in the Th.M. program is open to a limited number of students who have received the B.D. (or the equivalent) with superior academic records.

GENERAL REQUIREMENTS

The general requirements for the degree of Master of Theology are:

(1) thirty semester hours of advanced studies, with a minimum grade of "B" in each course;

(2) superior performance in a comprehensive examination covering the major and minor areas of study;

(3) residence for one academic year.

There are no general language requirements, but classical or modern languages may be required for certain courses (for example, Hebrew or Greek in Biblical studies.)

THE PROGRAM OF STUDY

At least twelve of the required thirty hours must be taken in one of the basic divisions of study (Biblical, Historical, Theological, or Practical) which shall be designated as the candidate's major; and at least six hours in another of the divisions which shall be designated as the candidate's minor. No more than twelve hours may be taken in summer sessions. No more than six semester hours of work done at another accredited institution may be transferred and credited

toward the degree. Ordinarily, no more than six hours may be taken through directed reading, and no more than three in any one semester or summer term. In the area of Pastoral Care, up to nine hours may be taken through clinical training, but no more than six in any one semester or summer term.

Each student will plan his program of courses and directed reading or clinical training with the guidance of a committee of two to be appointed by the Director of the Master's Program. The committee will include a professor in the student's major area of interest, who will act as chairman, and a professor in the minor area. The chairman, in consultation with the Director and the other member of the committee, will prepare, administer, and evaluate the comprehensive examination.

The comprehensive examination will be given at the close of the course of study for the degree, ordinarily in May or September.

The entire program of studies and comprehensive examination should be completed within twelve months. In exceptional cases, the time limit may be extended, but in no case beyond three years.

Conduct and Ministerial Acceptability

All students are admitted subject to the rules of the University and of the Divinity School, and continuance in the School is conditioned upon the observance of such rules.

The University expects of its students loyal cooperation in maintaining high standards of conduct as well as of scholarship. The University, therefore, reserves the right, and matriculation by the student is a concession of this right, to compel the withdrawal of any student whose conduct at any time is not satisfactory to the University, even though no specific charge is made against the student.

Divinity School students whose progress and development show that they are not suited to the work of the ministry will not be permitted to continue in the School. Personal and professional qualifications for the ministry will be considered in evaluating the candidacy of all students for degrees.

Courses of Instruction*

REQUIRED courses, and Senior Seminars are numbered from 10 to 50. Elective courses carrying credit in the Divinity School only are numbered from 51 to 199. Courses approved for credit in both the Divinity School and the Graduate School of Arts and Sciences are numbered above 200. Lists of courses to be offered in any semester will be available at the time of each registration.

I. Biblical Studies

OLD TESTAMENT

11. INTRODUCTION TO THE OLD TESTAMENT I.—The origin, literary forms, and contents of the books of the Old Testament in their geographical and historical setting to the Exile. 3 s.h. MR. STINESPRING

12. INTRODUCTION TO THE OLD TESTAMENT II.—The post-Exilic period with special reference to Psalms, wisdom literature, and the problem of theodicy. 3 s.h. MR. WINTERMUTE

101. POST-EXILIC PROPHECY.—A study of the post-Exilic prophets from Ezekiel to Daniel, with special reference to Messianic prophecy and related theological problems. 2 s.h.

196. THE BIBLE AND RECENT DISCOVERIES.—A survey of the contribution of the cultural setting of the Bible as an aid to its understanding. Illustrated with archaeological slides. 3 s.h.

197. CULTURAL HISTORY OF PALESTINE.—A study of significant contributions to civilization made in ancient, medieval, and modern Palestine with special reference to the three religions, Judaism, Christianity, and Islam. 3 s.h. MR. STINESPRING

201-202. FIRST HEBREW.—The principles and structure of the Hebrew language with translation of selected Old Testament narratives. One year of Greek prerequisite. 6 s.h. MR. STINESPRING

207. SECOND HEBREW.—II Samuel the first semester. 3 s.h. MR. STINESPRING OR MR. WINTERMUTE

208. SECOND HEBREW.—The Qumran Isaiah Scroll the second semester. 3 s.h. MR. STRUGNELL

209. BIBLICAL THEOLOGY.—A study of the Old and New Testaments from the standpoint of their theological unity. Prerequisite: O.T. 11 and N.T. 18. 3 s.h. MR. ANDERSON

301. THE THEOLOGY OF THE DEAD SEA SCROLLS.—A study of the religious ideas of the Scrolls in relation to the theology of the Old and New Testaments. Prerequisite: O.T. 11. 3 s.h. MR. STRUGNELL

* On approval of the Dean, courses offered in the Graduate School of Arts and Sciences other than those approved for credit in the Divinity School may be approved for credit in individual cases, provided no equivalent course is offered in the Divinity School; each case to be decided on its merits.

302. THEOLOGY OF THE INTERTESTAMENTAL LITERATURE.— A study of the Apocrypha and Pseudepigrapha with special reference to their relation to the theology of the Old and New Testaments. Prerequisite: O.T. 11. 3 s.h.
MR. ANDERSON

304. ARAMAIC.—A study of the Aramaic portions of the Old Testament, and selected passages from the Targums, Midrashes, and Talmuds. 3 s.h.
MR. STINESPRING

305. THIRD HEBREW.—An interpretative study of late Hebrew prose, with readings from Chronicles, Ecclesiastes, and the Mishnah. 3 s.h. MR. STINESPRING

306. LANGUAGE AND LITERATURE OF THE DEAD SEA SCROLLS. —A study in interpretation. Prerequisite, a knowledge of Hebrew. 3 s.h.
MR. STRUGNELL

307. SYRIAC.—A study of the script and grammar, with readings from the Syriac New Testament and other early Christian documents. Some knowledge of Hebrew and Aramaic prerequisite. 3 s.h. MR. STINESPRING

309. HISTORY OF THE ANCIENT NEAR EAST.—A specialized study of the civilizations of Egypt, Palestine, Syria, and Mesopotamia in the light of Biblical archaeology. 3 s.h. MR. STINESPRING

310. OLD TESTAMENT PROPHECY.—The prophetic movement in Israel with special emphasis on the theological standpoint of the prophets of the eighth century B.C. Prerequisite: O.T. 11 and O.T. 12. 3 s.h. MR. STINESPRING

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*HISTORY OF ART 215. RELIGIOUS ART OF THE ANCIENT NEAR EAST.—The development of art, particularly architecture and sculpture, as the material expression of religious ideas in Egypt, Mesopotamia, and in part Syria and Palestine to the Persian conquest. 3 s.h. MR. MARKMAN

*HISTORY OF ART 216. RELIGIOUS ART OF THE CLASSICAL WORLD.— The religious art, particularly architecture and sculpture, of Greece and Rome with special emphasis on the monuments in the Near East. 3 s.h. MR. MARKMAN

NEW TESTAMENT

18. EARLY CHRISTIAN LIFE AND LITERATURE.—A basic study of the civilization in which Christianity began; the origin and development of the Christian Church and its literature through the second century. 3 s.h. MR. CLARK

19. INTRODUCTION TO NEW TESTAMENT THEOLOGY.—A constructive analysis and exposition of the positive doctrinal content of the New Testament. Prerequisite: N.T. 18. 3 s.h. MR. ANDERSON

103-104. HELLENISTIC GREEK.—Designed for beginners to enable them to read the Greek New Testament. 6 s.h. MR. EFIRD

105. STUDIES IN PAUL.—An investigation of Paul's apostolate based upon the Acts and the Epistles with attention to Paul's theology as reflected in selected passages. 2 s.h. MR. ANDERSON

109. HISTORY OF THE ENGLISH BIBLE.—A general study of the history of the English version with comparison and evaluation of the numerous contemporary translations. This development will be illustrated from the Divinity School Bible collection, with access to and examination of the original editions. 3 s.h.
MR. CLARK

116. LIVING ISSUES OF NEW TESTAMENT THEOLOGY.—Examination of recent major questions of debate in the New Testament field. 3 s.h.
MR. ANDERSON

* Course offered in the Graduate School of Arts and Sciences which is credited toward the degree of Bachelor of Divinity.

216. THE PASTORAL EPISTLES.—A study of the Greek text with special reference to doctrinal teaching and the Church's situation as reflected in these writings. 3 s.h. MR. ANDERSON

217. THE NEW TESTAMENT IN GREEK.—Extensive reading of the Greek text of the New Testament, with special emphasis upon its interpretation. Prerequisite: six semester hours' study of the Greek language. 3 s.h. MR. CLARK

218. GALATIANS and I CORINTHIANS.— A detailed study of two of Paul's major epistles, based on the Greek text. Prerequisite: six semester hours' study of the Greek language. 3 s.h. MR. ANDERSON

220. I PETER AND THE GOSPEL OF JOHN.—A detailed study of two of the non-Pauline writings of the New Testament. The course will be based on the Greek text. Prerequisite: six semester hours' study of the Greek language. 3 s.h. MR. CLARK

311. THE LIFE AND TEACHINGS OF JESUS.—A study of the events and sayings of the historical Jesus, in the light of His mission. 3 s.h. MR. CLARK

313. APOSTOLIC FATHERS.—A study of the Christian development from Clement of Rome to Polycarp (90-155 A.D.), with readings in the Greek text. 3 s.h. MR. CLARK

314. PATRISTIC THOUGHT.—A study of the development of early Christian doctrine to the period of Irenaeus. Prerequisite: N.T. 19. 3 s.h.

316. HELLENISTIC RELIGIONS.—A study of the Gentile religions in the Roman Empire, at the beginning of the Christian era. Prerequisite: N.T. 18. 3 s.h. MR. CLARK

317. THE SYNOPTIC GOSPELS.—A detailed study of their characteristics and contents, based upon the Greek text, with attention to their respective sources and to the development of synoptic criticism. Prerequisite: Six semester hours' study of the Greek language. 3 s.h. MR. CLARK

318. TEXTUAL CRITICISM OF THE NEW TESTAMENT.—A study of the scientific recovery of the Greek text on which modern versions are based; manuscript discoveries; principles of textual criticism; practice in collating original manuscripts in the Duke collection. Prerequisite: N.T. 103-104, or its equivalent. 3 s.h. MR. CLARK

SEE ALSO Pr. 184 and 186, and O.T. 209.

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*GREEK 257.—The social and cultural history of the Hellenistic world from Alexander to Augustus. 3 s.h. MR. ROGERS

*LATIN 258.—The social and cultural history of the Graeco-Roman world. 3 s.h. MR. ROGERS

II. Historical Studies

HISTORY OF RELIGION AND MISSIONS

24. PHILOSOPHY OF THE CHRISTIAN WORLD MISSION.—A study of theological foundations, guiding principles, and contemporary problems of the World Christian Community. 2 s.h. MR. LACY

133. HISTORY OF CHRISTIAN MISSIONS.—A survey of the spread of Christianity with special emphasis on 19th and 20th century Protestantism. 2 s.h. MR. LACY

* Course offered in the Graduate School of Arts and Sciences which is credited toward the degree of Bachelor of Divinity.

135. AREA STUDIES OF THE CHRISTIAN CHURCH.—The cultural setting and current programs and policies of the Church in one of the following areas: a. Latin America, b. India and Pakistan, c. Africa, d. Southeast Asia, e. Japan-Korea-Philippines, f. Moslem Lands, or g. United States Home Missions. (The area of study to be determined by student interest in consultation with the instructor.) 2 s.h. MR. LACY

156. FOUNDATIONS OF THE ECUMENICAL MOVEMENT.—The historical, theological and organizational background of Church unity and disunity, with an analysis of contemporary structures and development. 3 s.h. MR. LACY

159. RELIGIONS OF INDIA.—Historical and theological introduction to Indian religious life and thought. The development of Buddhism is covered, as well as Jainism and Sikhism, along with the various modes of Hinduism. 3 s.h.
MR. SULLIVAN

179. RELIGIONS OF THE FAR EAST AND THE NEAR EAST. Historical and theological introduction to the major indigenous traditions of China and Japan, as well as to Zoroastrianism, Islam, and Judaism. 3 s.h.

CHURCH HISTORY

13. HISTORY OF THE CHURCH TO THE PROTESTANT REFORMATION.—A survey through the fifteenth century in terms of spiritual genius, organizational development, great literature, and representative movements. 3 s.h.
MR. PETRY

14. HISTORY OF MODERN EUROPEAN CHRISTIANITY.—A survey of the main currents in Reformation and post-Reformation church history. 3 s.h.
MR. HILLERBRAND

85. SEMINAR IN THE REFORMATION.—A seminar devoted to the study of select aspects of Reformation and Post-Reformation Church History. Prerequisite: Permission of the instructor. 2 s.h. MR. HILLERBRAND

137. RELIGIOUS LEADERS IN CHRISTIAN HISTORY.—Representative leaders in the early and medieval church studies in relation to contemporary churchmanship. Prerequisite: C.H. 13. 3 s.h. MR. PETRY

138. GREAT BOOKS IN CHRISTIAN HISTORY.—An intensive study of Augustine's *Confessions,* Thomas à Kempis' *Imitation of Christ,* Erasmus's *Complaint of Peace,* Luther's *Christian Liberty,* Calvin's *Instruction in Faith,* and Andrewes' *Private Devotions.* 3 s.h. MR. PETRY

139. METHODISM.—A study of Methodist societies in England and the developing church in America as they gave rise to such historic issues as polity, education, division, and reunion. Prerequisite: C.H. 13. 2 s.h. MR. PETRY

330. THE CHURCH IN EUROPE SINCE 1800.—Emphasis is placed on the relation of the church to the social, economic, and political life of Modern Europe. Particular attention is given to Papal pronouncements on social issues, the relationship of Eastern to Western institutions, and ecclesiastical historiography as it involves source editions, periodicals, and ecumenical literature. 3 s.h. MR. PETRY

331. THE SOCIAL MESSAGE OF THE EARLY AND MEDIEVAL CHURCH.—A study of the social teachings and contributions of the Christian church prior to the Protestant Reformation. Prerequisite: C.H. 13. 3 s.h. MR. PETRY

332. THE MEDIEVAL CHURCH.—Outstanding characteristics of the medieval church, emphasizing theory, polity, institutions, sacraments, and worship. Prerequisite: C.H. 13. 3 s.h. MR. PETRY

334. CHURCH REFORMERS AND CHRISTIAN UNITY.—The work of such reformers as Marsilius of Padua, William of Ockham, Jean Gerson, Pierre d'Ailly and Nicholas of Cusa in relation to ecclesiastical schism and the search for Christian unity through representative councils. Prerequisite: C.H. 13. 3 s.h. MR. PETRY

336. CHRISTIAN MYSTICISM IN THE MIDDLE AGES.—Source studies, in historical perspective, of such late medieval mystics as Bernard of Clairvaux, the

Victorines, Ramon Lull, Meister Eckhart, Richard Rolle, Catherine of Siena, and Nicholas of Cusa. Prerequisite: C.H. 13. 3 s.h. MR. PETRY

339. LEFT WING MOVEMENTS OF THE REFORMATION.—A survey of the history and theology of the "radical" Reformation. 3 s.h. MR. HILLERBRAND

HISTORICAL THEOLOGY

21. THE THEOLOGY OF THE PROTESTANT REFORMATION.—The Reformation of the 16th century and its outcome in the 17th and 18th centuries. 3 s.h. MR. GRISLIS

120. FAITH AND HERESY IN DIALOGUE.—Studies in the origin and role of the Apostles, the Nicene and the Chalcedonian Creeds in their contemporary setting. 3 s.h. MR. GRISLIS

121. SACRAMENTS IN THE CHRISTIAN CHURCH.—Ecumenical studies in devotion and division: Baptism and the Lord's Supper. 3 s.h. MR. GRISLIS

123. HISTORIC INTERPRETATIONS OF THE CHURCH.—A survey of changing conceptions of the Church in its history. 3 s.h. MR. HILLERBRAND

129. HISTORIC ANTI-CHRISTIAN POLEMICS.—Motifs and argumentation of critics of Christianity from Celsus to Nietzsche. 3 s.h. MR. HILLERBRAND

337. THE THEOLOGY OF MARTIN LUTHER.—A critical and comparative examination of Luther's system of thought. Prerequisite C.H. 13 and 14. 3 s.h. MR. HILLERBRAND

338. THE THEOLOGY OF JOHN CALVIN.—An exposition of the *Institutes of the Christian Religion* in relation to cognate documents. Prerequisite: H.T. 21 3 s.h. MR. GRISLIS

371. THE THEOLOGY OF JOHN WESLEY.—A study of Wesley's basic Christian doctrines. 2 s.h. MR. RICHEY

AMERICAN CHRISTIANITY

28. HISTORY OF AMERICAN CHRISTIANITY.—A consideration of the nature of Christianity in America and the history of its development. 3 s.h. MR. HENRY

191. PATTERNS OF THE SOUTHERN MIND.—The making of the social and religious mind of the American South since 1820. 3 s.h. MR. SMITH

199. THE AMERICAN SOCIAL GOSPEL.—A study of Protestant social thought and action in America since 1865. 3 s.h. MR. SMITH

296. RELIGION ON THE AMERICAN FRONTIER.—A study of the spread of evangelical Christianity as a theological and cultural phenomenon of the American West. Prerequisite: A.T. 28. 3 s.h. MR. HENRY

395. CHRISTIAN THOUGHT IN COLONIAL AMERICA.—Exposition of the main currents in Protestant Theology. 3 s.h. MR. SMITH

396. LIBERAL TRADITIONS IN AMERICAN THEOLOGY.—A study of the main types of modern religious thought, beginning with the theology of the Enlightenment. 3 s.h. MR. SMITH

397. CONTEMPORARY AMERICAN THEOLOGY.—A critical appraisal of major tendencies. 3 s.h. MR. HENRY

370. SEMINAR: JONATHAN EDWARDS.—A critical analysis of Edwards' major theological works. 2 s.h. MR. SMITH

372. SEMINAR: THEOLOGY OF PAUL TILLICH.—An examination of Tillich's philosophical theology. 2 s.h. MR. SMITH

III. Theological Studies

PHILOSOPHY OF RELIGION

20. TYPES OF RELIGIOUS PHILOSOPHY.—Basic historical orientation in religious thought, especially in Western Culture. 3 s.h. MR. LANGFORD

102. CHRISTIAN FAITH AND THE PROBLEM OF EVIL.—Analysis of the questions raised for faith by tragedy, suffering and/or evil, examination of answers proposed in Christian and philosophical literature. 2 s.h.

110. CHRISTIAN FAITH AND MODERN SCIENCE.—Relations, tensions, and possible harmonizations of scientific methodology and modern scientific knowledge with the Christian Faith. 2 s.h. MR. LANGFORD

121. GOD AND THE WORLD.—An examination of the Christian doctrines of God and the creation in the context of the History of Religions and the History of Philosophy, with emphasis upon the contemporary scene. 3 s.h.

CHRISTIAN THEOLOGY

32. CHRISTIAN THEOLOGY I.—A constructive statement of the themes of systematic theology as a task of the church today: theological method, knowledge of God, man, and Christ. 3 s.h. MR. CUSHMAN

33. CHRISTIAN THEOLOGY II.—God the redeemer, the church, word and sacraments, authority and ministry, the Kingdom of God. 3 s.h. MR. HERZOG

107. THE PERSON AND WORK OF CHRIST.—The problem of knowledge of Christ and formulation of a doctrine of his work and person in the light of Biblical eschatology. Prerequisite C.T. 20. 2 s.h. MR. CUSHMAN

108. REVELATION AND AUTHORITY.—A study of the relationship between revelation, Bible, preaching, and the church. 3 s.h. MR. HERZOG

195. ORIGINS OF DOGMATIC THOUGHT.—An analysis of dogmatic concepts in the Gospel of John: their development into a body of doctrine. 3 s.h. MR. HERZOG

213. THE STRUCTURE OF ROMAN CATHOLIC THOUGHT.—The main characteristics of Roman Catholic theology with consideration of possibilities and limitations in ecumencial conversation with Rome. Prerequisite: C.H. 13 and 14 and H.T. 21. 3 s.h. MR. HERZOG

224. CONCEPTIONS OF MAN IN WESTERN THOUGHT.—An analysis and interpretation of important types of philosophical and theological theory. 3 s.h. MR. RICHEY

320. SEMINAR: FRIEDRICH SCHLEIERMACHER.—Critical examination of the dogmatic system. Prerequisite: permission of instructor. 2 s.h. MR. CUSHMAN

321. PLATONISM AND CHRISTIANITY.—An analysis of Plato's religious philosophy and a survey of its continuing influence in Hellenistic and Christian thought. Prerequisite: six semester hours in Theology. 3 s.h. MR. CUSHMAN

322. NINETEENTH CENTURY EUROPEAN THEOLOGY.—Protestant theology from Kant to Herrmann. 3 s.h. MR. HERZOG

325. PHILOSOPHICAL THEOLOGY I.—Main problems in the history of philosophical theology. Prerequisite: permission of instructor. 3 s.h. MR. CUSHMAN

326. PHILOSOPHICAL THEOLOGY II.—Prolegomena to the system of Christian Theology. Prerequisite: C. T. 325. 3 s.h. MR. CUSHMAN

328. SEMINAR IN TWENTIETH CENTURY EUROPEAN THEOLOGY.—Critical examination of the thought of selected representative theologians. Prerequisite: permission of instructor. 3 s.h. MR. HERZOG

CHRISTIANITY AND CULTURE

16. CONTEMPORARY WESTERN CULTURE.—An analysis of the conceptual commitments in contemporary styles of thought and life as reflected in the natural sciences, philosophy, social analysis, and the arts. 3 s.h. Mr. Poteat

80. THE CHRISTIAN FAITH AND TRAGEDY.—An exploration of the tragic view of life as exhibited in selected classic and contemporary works of literature and a comparison of this with Christian belief. 3 s.h. Mr. Poteat

81. RECENT AND CONTEMPORARY ART AND THEOLOGY.—The study of 19th and 20th century painting and sculpture as documents of contemporary man's apprehension of himself and his world; and as elements in the conversation between Christian faith and culture. 3 s.h. Mr. Poteat

230. THE MEANING OF RELIGIOUS LANGUAGE.—An analysis of the credentials of some typical claims of theism in the light of theories of meaning in recent thought. Prerequisite: C.T. 32-33 or permission of instructor. 3 s.h. Mr. Poteat

231. SEMINAR IN CHRISTIANITY AND CONTEMPORARY THOUGHT.—Analytical reading and discussion of such critical cultural analysis as is found in the works of M. Polanyi, Arendt, Trilling, and others, with appraisal of the relevance for theological inquiry. Prerequisite: C.T. 32-33 or permission of instructor. 3 s.h. Mr. Poteat

380. EXISTENTIALIST THOUGHT.—An analysis of writings of representative thinkers from Kierkegaard to Satre. Prerequisite: C.T. 32-33 or permission of instructor. 3 s.h. Mr. Poteat

CHRISTIAN ETHICS

27. CHRISTIAN ETHICS I.—The central assumptions and principles of the Christian conception of the good life. 3 s.h. Mr. Beach

111. THE CHURCH AND RACE.—An examination of the biological and sociological meaning of race, the dynamics of race relations and the Church's responsibility in the area of contemporary life. 3 s.h.

114. CHRISTIAN ETHICS II.—A consideration of special problems involved in the application of Christian ethics in modern society. Prerequisite: C.E. 27. 2 s.h. Mr. Beach

190. THE CHRISTIAN CRITIQUE OF COMMUNISM.—Analysis of and alternatives to the dynamic secular ideology from a religious standpoint. 3 s.h. Mr. Lacy

192. CHRISTIANITY AND INTERNATIONAL RELATIONS.—An application of Christian Ethics to world problems. 3 s.h. Mr. Lacy

194. INTRODUCTION TO CHRISTIAN SOCIAL ETHICS.—Christian norms for social policy and their application to the domestic, economic, political, and racial patterns of modern culture. 3 s.h. Mr. Lacy

387. CHRISTIAN ETHICS AND SOCIAL PHILOSOPHY.—Selected social philosophies from Locke to Sumner, analyzed from the standpoint of Christian ethics. Prerequisite: C.E. 27. 3 s.h. Mr. Lacy

389. CHRISTIAN ETHICS AND CONTEMPORARY CULTURE.—A study of the interaction between Christian thought and current secular social theory. Prerequisite: C.E. 27 or its equivalent. 3 s.h. Mr. Beach

390. CURRENT PROBLEMS IN CHRISTIAN ETHICAL THEORY.—A critical study, seminar style, of dominant issues in Christian Ethics, through an analysis of a variety of contemporary Christian treatments of such problems as love, justice, community and vocation. Prerequisite: C.E. 27 or its equivalent. 3 s.h. Mr. Beach

391. HISTORICAL TYPES OF CHRISTIAN ETHICS I.—A critical study of representative statements of Christian ethical theory, through the early Reformation. Prerequisite: C.E. 27 or its equivalent. 3 s.h. MR. BEACH

392. HISTORICAL TYPES OF CHRISTIAN ETHICS II.—A continuation of C.E. 391, from the Reformation through current Christian ethical theory. Prerequisite: C.E. 391. 3 s.h. MR. BEACH

393. THE CHRISTIAN INTERPRETATION OF HISTORY.—A comparative examination of the chief secular and Christian theories of history current in Western thought. For advanced students. Prerequisite: C.E. 27. 3 s.h. MR. BEACH

394. CHRISTIANITY AND THE STATE.—The relation of the Christian theory of the State to political problems with special consideration of the religious assumptions underlying democratic theory and practice, and of the relationship of church to state. Prerequisite: C.E. 27. 3 s.h. MR. BEACH

IV. Professional Studies

THE CARE OF THE PARISH

10. THE CHURCH AND THE MINISTER'S VOCATION.— An orientation course for beginning students, devoted to a consideration of the nature of the Church and the tasks of the ministry. 2 s.h. MR. RICHEY AND OTHERS

23. THE CARE OF THE PARISH.—A consideration of the pastor's function as leader of the Christian community. 3 s.h. MR. INGRAM AND OTHERS

146. CHURCH BUILDING.—The role of the pastor in planning and executing building programs in the local church: architectural considerations and counsel, building requirements and plans. 2 s.h. MR. NESBITT

147. THE MINISTER IN THE PARISH.— Informal class discussion of the role of the minister in the varying responsibilities and problems of the parish as these involve the pulpit, pastoral, and community contexts. 2 s.h. MR. REGEN

148. CHRISTIAN STEWARDSHIP AND CHURCH FINANCE.—A seminar to consider the principles of stewardship education, budget making, enlistment in church support. 2 s.h. MR. INGRAM AND MR. KALE

149. PARISH AND COMMUNITY RESEARCH AND ANALYSIS.—Techniques of community survey, and the use of research data in program planning and in measuring the effectiveness of church work. 2 s.h.

150. RURAL CHURCH AND COMMUNITY.—The church serving the rural community, factors affecting church and community life, qualifications and task of rural leadership, and the church as a community institution. 2 s.h. MR. NESBITT

151. TOWN AND COUNTRY MINISTRY.—The small church, the circuit church, circuit administration, larger parish and group ministry, and the Town and Country movement. 2 s.h. MR. NESBITT

152. EVANGELISM AND THE LOCAL CHURCH.—A study of the nature, purposes and methods of contemporary Christian evangelism with special attention to the local church. 2 s.h. MR. KALE AND MR. INGRAM

153. THE PROGRAM OF THE LOCAL CHURCH.—A study of the objectives and methods of the program of the local church in Methodism with attention to planning for the church year. 2 s.h. MR. INGRAM

154. THE URBAN CHURCH.—The function, nature, program, and administration of the effective city church and of the urban minister's distinctive task. 2 s.h. MR. REGEN

155a. THE POLITY OF THE METHODIST CHURCH.—The history and present structure of the organization of The Methodist Church. 2 s.h. MR. INGRAM

155b. THE POLITY OF THE BAPTIST CHURCHES.

155c. THE POLITY OF THE CONGREGATIONAL-CHRISTIAN CHURCHES. MR. SCOTT

155d. THE POLITY OF THE PRESBYTERIAN CHURCHES. MR. REGEN

FIELD WORK PRACTICUM I.—Discussion of various aspects of parish work with opportunity for students to seek guidance respecting procedures and problems. Designed especially for students with parish responsibilities. (Fall Semester. Sections arranged.) 1 s.h. MR. KALE AND OTHERS

FIELD WORK PRACTICUM II. Required of students expecting summer assignments under the Endowment and Field Work Program. Types of parish service to be discussed. (Spring Semester) 1 s.h. MR. NESBITT AND OTHERS

FIELD WORK CREDIT.—Granted on written recommendation of the Director of Field Work upon the completion of satisfactory work in C.A. 23, or C.A. 147 or C.A. 150 and of Field Work Practice I or II and the performance of successful field work. 1 s.h. (Available only in the senior year.)

CHRISTIAN EDUCATION

22. THEOLOGY AND CHRISTIAN NURTURE.—The implications of theology and educational philosophy for the theory and practice of Christian education. 3 s.h. MR. RICHEY AND MR. KALE

25. THE CHURCH AND CHRISTIAN NURTURE.—A constructive survey of the local church as a community of Christian nurture: Statement and evaluation of objectives, leadership and resource materials, structural patterns and administrative and supervisory procedures for the church school. 2 s.h. MR. KALE

125. THEOLOGICAL AND PSYCHOLOGICAL INTERPRETATIONS OF MAN.—An inquiry into the relations of theological and psychological views of man's nature, predicament, and deliverance. 3 s.h. MR. RICHEY

126. MISSIONARY EDUCATION IN THE LOCAL CHURCH.—Practical programs for Church School, audio-visual aids, preaching, stewardship, and special projects. 2 s.h. MR. LACY AND OTHERS

129. RELIGION AND PERSONALITY.—Investigation of religious aspects of the origins, structure, and development of selfhood. 3 s.h. MR. RICHEY

159. CHRISTIAN FAITH AND HIGHER EDUCATION.—An examination of current philosophies of religion in higher education, with reference to student religious work and college teaching of religion. 2 s.h.

161. TEACHING METHODS.—Basic teaching procedures required by professional and lay workers in the local church. Opportunities are arranged for observation and guided practice in church schools, and/or other institutions. Required for candidates for the M.R.E. degree. 3 s.h. MR. KALE

162. CURRICULUM BUILDING IN THE LOCAL CHURCH.—An examination of influential theories of and contemporary trends in curriculum construction, together with an evaluation of existing curricula. Actual designing of short units for use in the local church. 3 s.h. MR. KALE

164. CHRISTIAN EDUCATION OF CHILDREN.—The organization and administration of the work of the church with children of the nursery, kindergarten, primary and junior age groups. 2 s.h. MR. KALE

165. CHRISTIAN EDUCATION OF YOUTH.—The organization and administration of the youth program in the local church. 2 s.h. MR. KALE

166. CHRISTIAN EDUCATION OF ADULTS.—A study of the needs of adults; the materials, methods, and principles of organization for the Christian education of adults. 2 s.h. MR. KALE

167. THEOLOGY AND THE LAY MIND.—Formulation and communication of the Christian faith, for the mind of today. (For Middlers and Seniors.) 3 s.h.
MR. RICHEY

169. THEORIES OF CHRISTIAN EDUCATION.—A critical investigation of current theories of Christian education. 3 s.h. MR. RICHEY

PASTORAL CARE

26. INTRODUCTION TO PASTORAL CARE.—The psychology of personal adjustment and pastoral care. An approach to pastoral care and its place in the pastor's total ministry grounded in an understanding of the dynamics of personal adjustment. 3 s.h. MR. GOODLING AND MR. SMITH

170. INTRODUCTION TO PASTORAL COUNSELING.—The philosophy and techniques of formal counseling through discussions of textual and interview material. Prerequisite: P.M. 26. 3 s.h. MR. GOODLING

171. PASTORAL CARE PRACTICUM I.—Pastoral Calls and Personal Counseling. A study of pastoral calling and personal counseling in the parish ministry. Prerequisites: P.M. 26 and 170. 2 s.h. MR. SMITH

172. PASTORAL CARE PRACTICUM II.—Marriage and the Family. A consideration of pre-marital and marital counseling and the psychodynamics of family life. Prerequisites: P.M. 26 and 170. 3 s.h. MR. GOODLING

173. PASTORAL CARE PRACTICUM III.—The Chaplain in a Rehabilitation Program. The ministry to those in alcoholic and correctional institutions. Prerequisites: P.M. 26 and 170. 2 s.h. STAFF

174. THE CHURCH AND MENTAL HEALTH.—The historic and present-day offices of the Church in Mental Health and a consideration of psychotherapeutic resources available in pastoral care and counseling. 2 s.h.
MR. GOODLING AND MR. SMITH

175. ADVANCED PASTORAL CARE PRACTICUM.—For advanced students who want additional clinical experience in one of the Pastoral Care Practicum areas. Consent of the instructor is required. Students may register for from 1 to 5 s.h. clinic credit. STAFF

176. PASTORAL CARE PRACTICUM IV.—The Psychiatric Setting. Lectures by staff and ward visits at the Dorothea Dix Hospital in Raleigh. The place of the minister in a program dealing with the causes, treatment, and prevention of mental illness. Prerequisites: P.M. 26 and 170. 3 s.h. MR. STEININGER

177. PASTORAL CARE PRACTICUM V.—The Hospital Ministry. Pastoral care and counseling with the ill, the dying, the bereaved. Prerequisites: P.M. 26 and 170. 2 s.h. and 1 s.h. clinic MR. GOODLING

188. PSYCHOTHERAPY AND THE CHRISTIAN FAITH.—A psychological approach to Christian faith and practice in relation to critical human problems. The psychotherapeutic interpretation for the Christian minister of man's disorganization and restoration. 3 s.h. MR. SMITH AND OTHERS

273. ADVANCED PASTORAL CARE PRACTICUM II.—The Chaplain in a Rehabilitation Program. Twenty hours of supervised clinical training weekly in a rehabilitation institution. 4 s.h. STAFF

276. ADVANCED PASTORAL CARE PRACTICUM III.—The Chaplain in a Psychiatric setting. Twenty hours of supervised clinical training weekly in a mental hospital. 4 s.h. STAFF

277. ADVANCED PASTORAL CARE PRACTICUM IV.—The Chaplain in the general hospital setting. Twenty hours of supervised clinical training weekly for each 4 s.h. clinic credits. 4 s.h. STAFF

THE PREACHING MINISTRY

29-30. SERMON CONSTRUCTION—THEORY AND PRACTICE.—An investigation of the theory of preaching (first semester). Detailed work in practice preaching and a clinical session each week on the application of theory (second semester). 3 s.h. MR. CARLTON AND OTHERS

181. PRACTICAL PROBLEMS IN PREACHING.—Analysis of selected sermons and discussion of problems facing the preacher in the pulpit. Prerequisite: Pr. 29. 2 s.h. MR. CLELAND AND MR. CARLTON

183. EXPOSITORY PREACHING—OLD TESTAMENT.—The exegesis and exposition of selected Old Testament passages for homiletical purposes. Prerequisite: Pr. 29. 2 s.h. MR. CLELAND

184. EXPOSITORY PREACHING—THE PAULINE EPISTLES.—A study for homiletical purposes of the religious experience and theology of Saint Paul and its influence on ethical theory and practice. Prerequisite: Pr. 29. 3 s.h. MR. CLELAND

185. EXPOSITORY PREACHING—NON-BIBLICAL.—An evaluation of drama, poetry and fiction for homiletical purposes. Prerequisite: Pr. 29. 3 s.h. MR. CLELAND

186. EXPOSITORY PREACHING—THE JOHANNINE WRITINGS.—The exegesis and exposition of the Gospel and the Epistle of John for homiletical purposes. Prerequisite: Pr. 29. 2 s.h. MR. CARLTON

187. PRE-REFORMATION PREACHING.—Sermons, handbooks, and other historical sources studied in relation to Biblical preaching and the liturgical church, the problem of popular ministry and the issues of Christian reform. Prerequisite: C.H. 13. 2 s.h. MR. PETRY

188. POST-REFORMATION PREACHING.—A study of the theological trends and significant personalities in the preaching tradition from the sixteenth century to the present. 2 s.h. MR. CARLTON

THE WORSHIP OF THE CHURCH

178. CORPORATE WORSHIP.—The theory and practice of the common worship of the Church, using various manuals of worship. One hour to be arranged. 3 s.h. MR. RUDIN

180. CHURCH MUSIC.—A three-fold study including: (1) musicianship, song-leading, and basic conducting; (2) a survey of the monuments of church music; (3) the problems of the music program in today's church. MR. HANKS

SPEECH

17. MINISTERAL COMMUNICATION.—Theory and practice of effective speaking, leading and oral reading in the context of corporate worship. In four sections, with drill groups and individual conferences. 2 s.h. MR. RUDIN

34. WORKSHOP IN COMMUNICATION.—Intensive drill in voice, diction, speaking and reading. Enrollment by platform test and recommendation of preaching faculty. 1 s.h. MR. RUDIN

134. LITURGICAL READING.—Practice in reading the liturgical materials of the pastoral ministry: Scriptures, prayers, and the rites and seasonal services in the Methodist *Book of Worship*. 2 s.h. MR. RUDIN

V. Senior Seminars

In the third year each B.D. candidate will take one Senior Seminar, yielding 2 s.h. credit. No student may enroll in more than one Senior Seminar without special permission of the Dean. Senior Seminars will not yield Graduate School credit, nor be open to special students.

Enrollment in each Senior Seminar shall be normally not more than twelve. No Senior Seminar need be conducted for an enrollment of less than five students. Each Senior Seminar will be in charge of a Chairman. Not less than two instructors will participate in each Seminar. General supervision of all Senior Seminars will be exercised by a standing committee of the Faculty.

The work done in each Senior Seminar should be equivalent to that done in a normal 2 s.h. course, with reading based upon a prepared reading list and a substantial paper or written project report.

SENIOR SEMINARS FOR 1960-61

Fall Semester

61. THE CHRISTIAN FAITH AND ITS PROCLAMATION 2 s.h.
Mr. Rudin, Mr. Cleland, Mr. Ingram

66. THE CHRISTIAN CHURCH AND SOCIAL CHANGE 2 s.h.
Mr. Lacy, Mr. Grislis

70. PASTORAL CARE AND PREACHING 2 s.h.
Mr. Carlton, Mr. Goodling, Mr. Richey

Spring Semester

62. WESTERN CHRISTIANITY AND NON-CHRISTIAN FAITHS 2 s.h.
Mr. Sullivan, Mr. Hillerbrand

67. THE NEW TESTAMENT AS MATERIALS FOR TEACHING 2 s.h.
Mr. Anderson, Mr. Kale, Mr. Henry

68. THE CHRISTIAN FAITH AND CONTEMPORARY LIFE 2 s.h.
Mr. Poteat, Mr. Herzog, Mr. Ingram

Not offered 1960-61

63. THE ECUMENICAL MOVEMENT IN THE MODERN CHURCH 2 s.h.

64. THE OLD TESTAMENT AS MATERIALS FOR TEACHING 2 s.h.

65. PRACTICAL VALUES OF BIBLICAL RESEARCH 2 s.h.

69. THE WORSHIPING CHURCH 2 s.h.

Cost, Residential Arrangement, Student Aid and Field Work

Fees and Cost

THE University tuition charge is $425.00 per semester. Scholarships covering this amount are granted to all Divinity School students. Other charges are as follows:

Fees per semester:

General Fee	$ 50.00
Approximate cost of meals per semester (estimated)	225.00
Room per semester (double room) for men	100.00
Total per semester	$375.00

The "General Fee" is in lieu of all special charges, and includes the following fees: Matriculation, Medical, Library, Damage, Commencement, and Diploma.

A "General Fee" is due and payable not later than the day of registration for a particular semester. After the day of registration no refund of the "General Fee" will be made except for involuntary withdrawal to enter the Armed Services.

Divinity School students may secure admission to all regularly scheduled University athletic contests held on the University grounds during the entire academic year by payment of the athletic fee of $10.00 per year plus any Federal taxes that may be imposed. This fee is payable in the fall semester.

Students who are reported by the treasurer's office as delinquent in their accounts will be debarred from credit in courses until cleared by the treasurer's office. Transcripts will not be issued for delinquent students.

A fee of $1.00 will be charged for any student-initiated change in courses after the beginning of classes each semester.

LATE REGISTRATION

Students matriculating in either semester at a date later than that prescribed in the catalogue shall pay to the Treasurer of the University a penalty of $5.00.

Living Accommodations

A description of dining facilities and living quarters is given in the *Bulletin of the Divinity School.*

Student Aid

Duke University remits its regular tuition charges to all students enrolled in the Divinity School. In recognition of this, students are expected to render occasional services such as the teaching of Church School classes and responding to calls for particular services. Financial aid, over and above this is available in the form of a limited number of scholarships and grants-in-aid. For details see the *Bulletin.*

THE SCHOOL OF LAW

Fall Semester begins September 22, 1960

Spring Semester begins January 30, 1961

The School: Its Purposes and Methods

THE OFFICIAL NAME of the School is the Duke University School of Law, but it will be referred to in these pages as the Duke Law School or the Law School.

The Duke Law School stems historically from the School of Law of Trinity College, with its history of legal instruction running back to the middle of the past century, antedating the Civil War. When, in the 1920's, Trinity College became Duke University, the Law School was completely reorganized. This reorganization culminated with the housing of the Law School in its present building in 1930, when the present character of the Duke Law School can be said to have been stamped.

The curriculum of the Law School provides thorough preparation for the practice of law in any state; its graduates have been admitted to the bar in virtually every state and territory. Opportunities for specialization in particular branches of the law are afforded.

In carrying out the trust imposed by the indenture establishing the Duke Endowment, the Law School seeks to have the student acquire knowledge and comprehension not only of legal doctrine, but also of the judicial process and of the social, economic, and political problems with which law and lawyers must deal. The method of instruction employed compels analysis of judicial opinions and inquiry into the nonlegal as well as the legal considerations which underlie them. In appropriate courses, special consideration is given to the work of the legislative and administrative agencies of government. In recognition of the increasing importance of the role of the lawyer in representing private interests before government agencies and in government service, a broad program is offered in the public law field. Scope for creative student work is provided by seminar courses and supervised individual study and research.

Practical training is not left for the first years of practice. A carefully integrated series of courses is designed to give students actual experience in the work of lawyers. Legal research, writing courses, moot court work and practical study of steps in law suits in the first and second years are followed in the third year by seminar courses emphasizing trial techniques, legal planning and drafting and interdisciplinary approaches particularly in the medico-legal area. A student bar association affords a means whereby the student may gain acquaintance with the professional organizations through which a lawyer may and should contribute to the well-being of his profession and of society.

Admission, Registration, and Fees

Admission

DIRECTIONS TO APPLICANTS FOR ADMISSION

APPLICATION must be made on the prescribed Law School application blank which will be sent upon request. No applicant will be accepted until all required documents are on file. These documents are: (1) the application itself, to which a recently made personal photograph should be attached; (2) a transcript of college record (see next paragraph); (3) a report of the applicant's score on the Law School Admission Test, described below; (4) letters from an official of the college attended and from three or more responsible persons who are acquainted with the applicant's character and general qualifications. *These letters will be requested by the Law School,* and the applicant need only furnish the names and addresses of persons from whom the desired information can be obtained.

Most of our applicants apply at a time when they are still in college, either in the fall or winter of their current college year. We do not ordinarily wait for the completion of the current year's college work before admitting an applicant; normally we take acceptance action on the basis of a transcript showing college work through the junior year, although we may at times ask for a transcript showing also one semester or term of the senior year. Such acceptance is tentative only and is subject to our final action taken in the light of the further supplemental transcript showing all the college work required for admission to the Law School. (However, it is very rare for an accepted applicant to be later rejected on the basis of his completed transcript.) A good time for a student in college to apply, if he has a superior record, is in the fall of his last year.

The Law School Admission Test, referred to above, is administered by the Educational Testing Service. It is given four times a year at examination centers conveniently located throughout the United States. No special preparation for the test is necessary, since it is designed to measure aptitudes rather than knowledge of subject matter. The applicant's score on the test will be considered along with other data in passing upon his admission to the Law School. Application forms and information concerning the test should be procured by writing directly to the Educational Testing Service, 20 Nassau Street, Princeton, New Jersey.

TIMES OF ADMISSION

Beginning students may enter only at the opening of the fall semester in any year. Students who have completed the first year of law study at this or any other law school approved by the Association of American Law Schools may enter at the beginning of any semester.

REQUIREMENTS FOR ADMISSION

An application for admission to Duke Law School as a candidate for the degree of Bachelor of Laws may be submitted by any person who is a graduate of a college of approved standing. Applications may also be submitted by a candidate who has completed in a college of approved standing work equivalent in number of units to three-fourths of that required for graduation and whose college work is of outstandingly superior quality and in its entirety shows an average grade far above that required for graduation, the requirement in each case being determined by the regulations of the college where the works was taken.

COMBINED COURSE

A number of colleges, upon application by their students, have permitted those who have completed three years of undergraduate work to enter the Duke Law School and upon the satisfactory completion of the first year of law school work to receive their Bachelor of Arts degree from such colleges. It is suggested that students desiring to enter Duke Law School make inquiry of their proper college authorities regarding this point.

A student from an undergraduate college of Duke University who has completed therein three years of study may apply to that college to enroll in a combined course wherein his first year of law study may be accepted toward the Bachelor of Arts degree. Upon the completion of four additional semesters of law study, he will receive the Bachelor of Laws degree.

ADMISSION TO ADVANCED STANDING

Any person who has complied with the requirements for admission set forth in this announcement prior to the commencement of his law study, who presents evidence of the satisfactory completion of at least one year of study at any law school which is a member of the Association of American Law Schools, and who is eligible for readmission to the law school from which he proposes to transfer, may be admitted to advanced standing, subject to such rules as would be applicable to students in this School having a comparable scholastic record. Provisional credit for courses so completed will be given, final credit being conditioned on the completion of at least one full year of law study in this School with an average at least five points above the passing

grade. Adjustment of credit for work done in such other law schools may be made by the Dean or by vote of the Faculty.

CANDIDATES FOR GRADUATE DEGREES

Applications for admission to graduate study should be addressed to the Dean of the Law School and should include transcripts of records of legal and prelegal work.

Registration

Registration is conducted in the Law Building. All students, both old and new, are required to register at the beginning of each semester, at which time class schedules and course cards must be filled out and approved. Students who register in any semester at a date later than that prescribed are required to pay to the Treasurer of the University a penalty of $5.00 for late registration unless excused therefrom. A student's registration for any semester is not complete until he has paid the tuition and fees for that semester. The $5.00 penalty for late registration will be imposed, therefore, unless the student has paid his tuition and fees by registration day.

REGISTRATION FOR BAR EXAMINATION

Many states now require that a student, prior to or shortly after beginning the study of law, register with the board of bar examiners of the state if he intends to practice therein. Each student should write to the secretary of the board of bar examiners of the state in which he plans to practice and ascertain if that state makes this requirement.

CONDUCT OF STUDENTS

All students are admitted subject to the rules of the University and of the Law School, and continuance in the School is conditioned upon the observance of such rules.

The University expects of its students loyal and hearty co-operation in developing and maintaining high standards of conduct as well as of scholarship. The University, therefore, reserves the right, and matriculation by the student is a concession of this right, to compel the withdrawal of any student whose conduct at any time is not satisfactory to the University.

Fees and Expenses

Tuition fees are due at the beginning of each semester. As of the present writing, the tuition fee is $325.00 a semester, but the applicant

is advised to get the latest information about tuition charges. In addition, a general fee of $50.00 per semester is required in lieu of separate fees for matriculation, medical service, and the like.

The admission of an applicant is not final until he deposits the sum of $25.00 with the Treasurer of the University. This deposit will not be returned, but will be credited to the account of the student.

Law students may secure admission to all regularly scheduled University athletic contests held on the University grounds and may use the facilities of the Duke Golf Course (upon payment of student green-fees) during the entire academic year by payment of the athletic fee of $10.00 per year plus any Federal taxes that may be imposed. This fee is payable in the fall semester.

The payment of the general fee entitles the student to the medical and surgical care described later in this Bulletin under "Medical Care." Due to rising costs it may be necessary to consider some readjustment of these charges. In the event of an adjustment applicants will be notified.

It is estimated that the expense of a careful unmarried student at Duke Law School, aside from tuition and fees, can be kept around $1,000 per academic year.

SCHOLARSHIPS, LOANS, AND EMPLOYMENT

General scholarships are available to students who have a superior record and who show promise of success in the study of law. General scholarships are usually sufficient in amount to cover tuition, and for students with outstanding records and promise the amount may be substantially in excess of tuition.

Besides the general scholarship fund, five Regional Scholarships of $1,200 each for applicants from North Carolina and South Carolina have been made available. Such scholarships will be awarded annually on a competitive basis to the residents of the states of North Carolina and South Carolina who qualify as entering law students. Such scholarships are renewable for a maximum period of three years on the condition that the holder maintain a scholastic average of "B" or higher in the School of Law. The total amount awarded to the recipient who qualifies for the maximum period is $3,600. Details concerning these scholarship awards will be furnished upon request.

In addition, students who are not awarded one of the above scholarships may still be eligible to receive, in their first year of law study, Southern Scholarships if they come from one of the following states: Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, or West Virginia. The amount of these scholarships is based in general on differentials in costs that

may be involved in going to law school at Duke University as compared with a law school at the student's home location.

General and Regional scholarship grants will be continued as to second- and third-year students maintaining a high standard of work. There are also a number of positions as assistants in the Law Library and as research assistants which are open to students, particularly in their second or third year, who do not receive other aids from the University.

Loans covering tuition and other expenses are available to students who have completed at least one semester in residence and whose records have been satisfactory. Loans generally mature after borrowers have left the University. Loan interest on long-term loans begins to accrue at the rate of 1 per cent from the date of the note, but after the student has left the University permanently the loan will begin bearing interest at 3 per cent per annum for the following five-year required-payment period. The University's Student Loan Committee in approving loans selects those students who, from the standpoint of character, scholastic attainment, personality and degree of financial need, are deserving of this consideration. The University participates in the National Defense Student Loan Program, under which loans are administered by the same Committee under these same standards.

A special fund is also available for law students for small loans to tide over temporary financial emergencies arising during the course of the year.

Although it is not advisable for a law student to undertake any substantial amount of outside work, arrangements have been made to provide part-time employment for capable law students who otherwise would be unable to meet the expense of studying law at Duke.

A statement relative to scholarships, fellowships, and loan funds appears in the *Bulletin of the School of Law*. A description of dining facilities and living quarters is also given in this bulletin.

LAWS REGARDING PAYMENTS

The Executive Committee of Duke University has enacted the following regulations which govern the payment of all fees due the University:

1. The President and the Treasurer of the University have no authority to suspend or in any way alter these regulations.

2. Any student who has failed to pay his bills on the dates advertised in the catalogue is denied the right to attend classes until his account is settled in full; subsequent withdrawal does not entitle a student to a refund.

3. No student is considered by the Faculty as an applicant for

graduation until he has settled with the Treasurer for all his indebtedness to the University.

4. No student who has not settled all his bills with the Treasurer of the University is allowed to stand the midyear or final examinations of the academic year.

When a student wishes his bills sent to his parents or guardian, the student or his parent or guardian must so notify the Treasurer of the University in writing in due time, but this in no way releases the student from liability to established penalties, if his bills are not paid on the dates advertised.

Bachelor of Laws Degree

UPON favorable recommendation of the Faculty, the degree of Bachelor of Laws will be conferred on students who shall have successfully completed six semesters' study of law, the last two semesters of work immediately preceding the granting of such degree having been completed in this School.

A student shall be deemed to have completed successfully six semesters' study of law if during this period he has

(1) secured a passing grade in courses aggregating eighty semester hours (except that 78 hours only are required for students graduating prior to 1962);

(2) secured in every required course a grade not requiring repetition thereof; and

(3) secured a weighted average at least five points above passing in all work taken other than first-year courses, or, if the grade in such work is lower than that above specified, an average grade of five points above passing in all work taken.

Students who have spent only their last two semesters of study in residence in this School must have received a weighted average at least five points above passing for that year.

MINIMUM AND MAXIMUM STUDENT LOADS

No regular student is permitted to take less than twelve course hours per semester. No first-year student is permitted to take courses in excess of the first-year program.

Second- and third-year students are not permitted to take for credit more than sixteen course hours per semester; nor to audit and take for credit more than seventeen course hours per semester. In exceptional cases, students may petition the Faculty for permission to take more or less than the prescribed maximum or minimum loads.

ATTENDANCE

Regular class attendance is required. The right to take the examinations, as well as the privilege of continuing one's membership in the School at any time, is conditioned upon regular attendance at the exercises of the School.

STANDARDS OF SCHOLARSHIP

GRADES—The final grades in each course are given in numerical terms which are equivalent to letter grades according to the following scale: 80 to 100, A; 70-79, B; 55-69, C; 50-54, D; 0-49, F.

A grade of 50 is necessary for passing a course. Where a grade below 50 is given a student in any required course, the course must be repeated if the instructor reports the grade with the notation "must repeat." When a student successfully repeats a course which he had failed, he is merely given a "P" (for "pass") in that course and neither the course nor the grade is recognized in computing his average.

ELIGIBILITY TO CONTINUE LAW STUDY.—Any student who at the end of his first year or at the end of any subsequent semester has an average grade lower than 50 on all the work then taken is ineligible to continue his work in the School. Any other student (1) whose average final grade at the end of his first semester is below 50, or (2) whose average grade at the end of any subsequent semester on all the work then taken is below 55, or (3) who in any single semester or in any single year receives failure grades in courses totaling eight or more semester hours, may at any time be declared by the Dean ineligible to continue.

NOTIFICATION OF UNSATISFACTORY SCHOLASTIC STANDING.—Every student subject to the provisions of the second sentence of the paragraph above, who has not been declared ineligible to continue his work in the School will be given a formal, written notice by the Dean's Office. This notice will set forth his average grade or grades and inform him (1) that he will be subject for the ensuing year to the special supervision of the Dean, who may order his dismissal from the School in the event of his failure to maintain a satisfactory scholastic standard, and (2) that he will be ineligible to receive a degree unless his work meets the scholastic requirements for graduation, which will be set forth in full in such notice.

Every other student whose average final grade at the end of any semester on the work of that semester, or on all work then taken, does not exceed the minimum average grade required for graduation by more than two points will be given a notice similar to that provided for above.

Graduate Work in Law

Objectives of the Graduate Study Program

THE graduate program of the School of Law is framed with a view to the encouragement and recognition of legal scholarship. It is addressed to the needs of those who have objectives consistent with the purposes of graduate legal education. It provides training for the qualified student who aspires to a teaching career, or who wishes to become proficient in a special field of the law, to do serious legal research, to prepare himself for a public law practice in or out of government, or to acquire a broader and deeper legal education than the undergraduate curriculum offers.

Master of Laws

ADMISSION TO CANDIDACY FOR THE DEGREE OF MASTER OF LAWS

Any person who has received the first degree in law from a law school qualified for membership in the Association of American Law Schools may be admitted as a candidate for the degree of Master of Laws, provided he satisfies the Committee on Graduate Study that his objective in desiring to do graduate work in law is consistent with the purposes for which the program is offered, and provided he demonstrates to the Committee, on the basis of his law school record, his capacity to take and profit by graduate work in law. In exceptional cases an applicant who does not meet the above requirements may, on vote of the Faculty, be admitted to candidacy for this degree if he is able to demonstrate that he is specially qualified, as by reason of practice or teaching. Normally the applicant will be required to show a level of scholarship appreciably higher than that required for the first degree in law at the institution from which he received that degree. An exceptionally high record in law school and in the graduate study program is expected of those who aspire to a teaching career.

REQUIREMENTS FOR THE DEGREE OF MASTER OF LAWS

The degree of Master of Laws is reserved for students who, having demonstrated their capacity for graduate work in law, maintain a level

of scholarship substantially higher than that required for the degree of Bachelor of Laws.

The candidate for this degree is required to complete a course of study comprising not less than twenty nor more than twenty-six semester hours, or approved research equivalent thereto. Two full semesters are required for the completion of this program. A candidate for this degree is required to include in his course of study at least two courses from Jurisprudence, Legal History, and the International or Comparative Law area. Other suitable courses will be selected by the candidate subject to the approval of the Committee on Graduate Study. In special circumstances, credit not in excess of two hours per semester may be arranged for special, supervised research projects. In addition to the minimum requirement of twenty semester hours, the candidate is required to submit an essay representing substantial research on a legal subject. This essay is to be prepared under the supervision of the instructor in charge of the field in which the research is done. The candidate will find it helpful to have formulated a project of research, or alternative projects, before his admission to graduate study or, at any rate, before pursuing his graduate study in residence. In appropriate cases, the candidate will be encouraged to take related work in other departments of the University.

Doctor of Juridical Science

ADMISSION TO CANDIDACY FOR THE DEGREE OF DOCTOR OF JURIDICAL SCIENCE

Any person holding the degree of Master of Laws from this or any other law school which is qualified for membership in the Association of American Law Schools may, on vote of the Faculty, be admitted to candidacy for the degree of Doctor of Juridical Science (S.J.D.), provided he completed the work for the Master's degree with distinction.

REQUIREMENTS FOR THE DEGREE OF DOCTOR OF JURIDICAL SCIENCE

Upon favorable recommendation of the Faculty, the degree of Doctor of Juridical Science will be conferred on students admitted to candidacy for that degree who complete and submit a monograph or series of essays suitable for publication and deemed by the Faculty to be of distinguished character and who pass an oral examination before a special committee appointed for that examination. At least one academic year and, in the absence of an extension granted by the Faculty, not more than three years must elapse between the award of the Master's degree and the award of the degree of Doctor of Juridi-

cal Science. Students who have received the degree of Master of Laws from another law school must spend at least two full semesters engaged in research at this School, and in addition may be required to complete a course of study prescribed by the Committee on Graduate Study. The monograph or series of essays required may be based upon, or be an extension of, the essay required for the Master's degree, provided substantial additional research is represented.

Program of Instruction

The First-Year Program

All students are required to take the first-year courses listed below. A detailed description of these courses and the other courses listed under the Program of Instruction appears at pages 316 to 322 of this Bulletin.

	Semester Hours	
	Fall	Spring
Chattel Transactions	2	
Contracts	3	3
Criminal Law and Procedure	2	2
Research and Writing I	1	1
Torts	3	2
Civil Procedure	3	3
Property I	2	2
Business Associations I		3
	16	16

The Recommended Second-Year Program

The recommended second-year program is given below. Research and Writing II is required. Second-year students may substitute third-year courses for other second-year courses with the permission of the instructors in the substituted courses. However, a student omitting a second-year course from his second-year program may find himself unable to take that course in his third year because it may be scheduled at the same hour as a third-year course which he wishes to take.

East student must take courses aggregating 12 to 16 hours each semester, except that, with the consent of the Dean, a student may take more or less.

	Semester Hours	
	Fall	Spring
Evidence	2	2
Constitutional Law	2	3
Business Associations II	2	2
Commercial Law	2	3
Property II	4	
Trusts	3	
Research and Writing II [Required]	1	
Administrative Law		3
Federal Taxation I		3
	16	16

The Third-Year Program

Each student must take courses aggregating 12 to 16 hours each semester, except that, with the consent of the Dean, a student may take more or less.

	SEMESTER HOURS	
	Fall	Spring
Labor Relations	4	
Debtors' Estates	3	
Federal Taxation II	3	
Jurisprudence	3	
International Economic Relations	3	
Unfair Competition (not offered 1960-61)	3	
World Law	2	
Equitable Remedies	2	
Medico-Legal Problems	2	
Workmen's Compensation	2	
Securities Regulation	2	
North Carolina Practice	2	
Administration of Estates	2	
Family Law	2	
Legal History (not offered 1960-61)	2	
Conflict of Laws		3
International Law		3
Public Regulation of Business		3
Conveyancing (in 1960-61 only)		3
Real Estate Transactions (not offered 1960-61)		3
Security (in 1960-61 only)		3
Labor Standards		2
Civil Liberties & Rights		2
Federal Jurisdiction		2
Insurance		2
Corporate Planning & Drafting		2
Federal Taxation III		2
Tax & Estate Planning		2
Trial Practice		2
North Carolina Statutes & Decisions		2
Comparative Law		2
Criminal Law Seminar (not offered 1960-61)		2
Legal Profession		1
Patent Law		1

Description of Courses

Business Courses

BUSINESS ASSOCIATIONS I. Legal principles concerning association in business by agency, partnership, other unincorporated forms and corporations. Creation, form and nature of agency, partnership and corporation, corporate existence (de facto corporations, corporate entity and its limitations), powers, duties, liabilities and compensation of agents, partners, officers and directors, risks in conduct of business by representatives (vicarious liability in tort, authority to contract), imputation of notice and knowledge, scope of enterprise (ultra vires), revocation and termination of authority, ratification, undisclosed business associates, stability of the associational relationship. The purpose of this course is to grasp basic principles of Agency and Partnership and introductory related principles of corporation law. (The main basic study of corporation law, however, is in Business Associations II.) Three hours a week second semester. MR. LATTY

BUSINESS ASSOCIATIONS II. Promoters, subscription to and issue of shares, stock structure and corporate capital, dividends, preferred stock, bonds, capital increases and reduction, corporate re-acquisition of own stock, elementary principles of corporate accounting, public issue of securities, stock transfers, fundamental corporate changes (recapitalization, sale, merger and consolidation, dissolution), stockholders' suits, and certain principles concerning management and operation not studied in Business Associations I. Two hours a week throughout the year.
MR. O'NEAL

COMMERCIAL LAW. An integrated study of the law governing commercial transactions, embracing the fields of sales and sales financing, chattel security, and negotiable instruments. Two hours a week first semester, three hours a week second semester. MR. SHIMM

CONTRACTS. The formation and legal operation of contracts in general, with attention to problems of drafting and counseling as well as of litigation and extrajudicial settlement. Legal and equitable remedies in contract cases, including damages, specific performance, and restitutionary remedies, and important procedural devices incident to such remedies. Three hours a week throughout the year.
MR. STANSBURY

CORPORATE PLANNING AND DRAFTING. The student is given hypothetical corporate problems (perhaps taken from the practicing lawyer's desk) on a client's proposed course of action; each problem is designed to require the student to grasp the business situation and goals involved, analyze for pertinent legal principles, plan the transaction to avoid legal and business (including taxation) pitfalls, plan the requisite steps to consummate the desired transaction, draft the appropriate papers and present his research. Two hours a week first semester.
MR. O'NEAL

DEBTORS' ESTATES. Comparative study of methods used for the liquidation of debtors' estates. The nonbankruptcy materials cover individual creditor's rights by attachment, garnishment, execution, creditors' bills and the like; common law composition; and general assignments. The bankruptcy materials cover, in the main, the first seven chapters of the Bankruptcy Act. Three hours a week first semester. MR. SHIMM

INSURANCE. The nature of "insurance"; state supervision and control; types of insurance organization; the legal requirement of insurable interest; interest of

others than the named insured; the measure of indemnity and subrogation; the beneficiary's interest in life insurance; the insured event, and excepted causes; warranties, representations and concealment; the making of insurance contracts; waiver, estoppel and election. Two hours a week second semester. MR. HARDIN

INTERNATIONAL ECONOMIC RELATIONS. See Public Law Courses page 319 for description. Three hours a week first semester. MR. BAADE

NEGOTIABLE INSTRUMENTS. Comparative study of the different types of commercial instruments, their different functions and legal incidents. Two hours a week second semester. MR. SHIMM

PUBLIC REGULATION OF BUSINESS. See Public Law Courses, page 320 for description. Three hours a week second semester. MR. LIVENGOOD

SECURITIES REGULATION. Regulation of distribution and marketing of securities and protection of the investor under the Securities Act of 1933, the Securities and Exchange Act of 1934, the Public Utility Holding Company Act of 1935 and the Trust Indenture Act of 1939, with summary treatment of other related federal legislation; the role of the Securities and Exchange Commission; a brief survey of state regulation. Considerable emphasis is placed on civil liabilities under the federal legislation. Two hours a week second semester.
MESSRS. MEEKER AND O'NEAL

SECURITY. Mortgage and security interests in real property, and suretyship. Three hours a week second semester. MR. EVERETT

UNFAIR COMPETITION. Specific unfair trade practices at common law and under state and federal statutes. Includes trademarks and tradenames, appropriation of business ideas and plans created by another, Federal Trade Commission regulation of misrepresentation practices, state fair trade acts and statutes prohibiting sales below cost, price discrimination under Robinson-Patman Act, boycotts, and disparagement. Three hours a week first semester. (Not offered in 1960-61.)

Property Courses

CHATTEL TRANSACTIONS. The course uses the field of Personal Property and the traditional title-passing rules of Sales to appraise judicial reasoning and legal concepts. It serves both as a low-level course in judicial methodology and an introduction to commercial law. It deals with possession and title of chattels, the bailment relationship, artisan's lien, transfer of chattels by gift and miscellaneous inter-vivos transactions. It does not go into details of enforcement of buyers' and sellers' rights or sales financing. Two hours a week first semester.
MR. LATTY

PROPERTY I. The basic concepts of real property law and conveyancing. Historical background; estates in land, including the fee simple, the fee tail with its statutory substitutes, the life estate, the estate for years and other non-freeholds; concurrent ownership; types of future interests; conveyances before and after the Statute of Uses; landlord and tenant; the modern deed—kinds, delivery, description, title covenants; recording and title registration. Two hours a week throughout the year. MR. BOLICH

PROPERTY II. The various rules and concepts governing transmission of property from one generation to another, including the materials normally covered in the traditional courses on Wills and Future Interests. Historical background; intestate succession at common law and under modern statutes; limitations upon testamentary power; execution and revocation of wills; contest of wills; lapse, ademption and satisfaction; future interests, comprising reversions, remainders, executory interests, rights of entry, possibilities of reverter, and their incidents; class gifts; powers of appointment; rule against perpetuities and other restrictions on the creation of interests; construction of wills and deeds. Four hours a week first semester. MR. BOLICH

CONVEYANCING. Form and execution of deeds, description in deeds; rents, licenses, easements and profits; covenants and agreements running with the land at law and in equity; estoppel by deed; recording and title registration; aspects of public control of land use. Three hours a week second semester. MR. BOLICH

REAL ESTATE TRANSACTIONS. Aspects of real estate practice including problems of land-use development through private devices involving restrictive covenants, easements, conditions and other concepts; public control by zoning and subdivision legislation; and public-private cooperative arrangements such as urban renewal. Three hours a week second semester. (Not offered in 1960-61.)

TAX AND ESTATE PLANNING. Seminar devoted to problems and techniques of tax and estate planning. Federal Taxation I and Federal Taxation II and Property II are prerequisite to enrollment in the seminar. Enrollment limited. Two hours a week second semester. MESSRS. BOLICH AND LOWNDES

TRUSTS. The nature, creation and elements of a trust; character and transfer of the beneficiary's interest; charitable trusts; administration of trusts; termination and modification of trusts; liabilities to and of third persons; enforcement of trusts; and constructive and resulting trusts. Three hours a week first semester. MR. LOWNDES

ADMINISTRATION OF ESTATES. Probate and administration; grant of administration; probate and contest of wills; assets; contracts, sales and investments by personal representative; claims; settlement of the estate. Two hours a week second semester. MR. EVERETT

Public Law Courses

ADMINISTRATIVE LAW. The formulation of statutory schemes of administrative regulation: the organization of administrative agencies; the determination, promulgation and enforcement of administrative programs; the respective spheres of administrative and judical responsibility; judicial control over administrative action. Practice and procedure before administrative agencies: informal conferences and negotiations; formal hearings; constitutional limitations. Three hours a week second semester. MR. KRAMER

CIVIL LIBERTIES AND CIVIL RIGHTS SEMINAR. Studies in the field of personal liberties (freedom of speech, press, religion, association, etc.) and in the field of civil rights (right to non-discriminatory treatment, right to fairness in procedure, etc.). The seminar will be concerned with issues about which the law is unsettled, and especially with issues raised in cases pending before the Supreme Court of the United States. Two hours a week second semester. MR. MAGGS

CONSTITUTIONAL LAW. Judicial protection against arbitrary governmental action; the history of the concept of a "higher law"; the constitutional clauses relied upon. Limitations on governmental power with respect of economic matters, civil liberties and criminal and civil procedure. The powers of Congress, express and implied; limitations on State governmental powers resulting from the existence and from the exercise of Congressional powers. The constitutional questions involved in administrative law, conflict of laws, intergovernmental tax immunities, jurisdiction to tax, and state taxation of interstate commerce are covered more fully in other courses. Two hours a week first semester, three hours a week second semester. MR. MAGGS

CRIMINAL LAW AND PROCEDURE. An introductory study of the law of crimes and the administration of criminal justice; analysis of the criminal act and the mental element in crime; consideration of specific offenses as defined by statute and the common law; discussion of typical defenses in relation to specific crimes; study of the Anglo-American penal system. Two hours a week throughout the year. MR. LIVENGOOD

CRIMINAL LAW SEMINAR OR MILITARY LAW SEMINAR. If the student demand is for military law, this course will deal with military jurisdiction and the

body of both substantive and procedural law that has developed under the Uniform Code of Military Justice; in addition to its other goals, the seminar seeks to develop skills in statutory interpretation and to encourage comparisons between civilian and military criminal law administration. Otherwise, the course will deal with criminal law matters that cannot be adequately treated in the introductory criminal law course—such topics as involuntary confessions and the McNabb rule, the indigent defendant, scientific criminal investigation and the protection of an accused's rights, mental responsibility and continental criminal procedure, with considerable field work contemplated. Two hours a week second semester. (Not offered in 1960-61.)

FEDERAL JURISDICTION. A study of the federal courts with respect to the part played by them in achieving a workable federalism. Special attention will be given to the original jurisdiction of the federal district courts, the relationship of the federal courts to state courts and state law, and the permissible and desirable range of federal judicial power. Two hours a week second semester. MR PASCHAL

FEDERAL TAXATION I. An introduction to federal taxation with emphasis on the federal income tax. The topics considered include such basic concepts of income taxation as taxable income, deductions, the taxable person, accounting for income and deductions, computation of the tax, and capital gains and losses. Three hours a week second semester. MR. LOWNDES

FEDERAL TAXATION II. A more advanced course in federal taxation. The principal emphasis of the course is on the federal estate and gift taxes. Consideration is also given, however, to the related portions of the federal income tax dealing with the taxation of the income of estates and trusts and income in respect of a decedent. Three hours a week first semester. MR. LOWNDES

FEDERAL TAXATION III. An advanced course in the federal income tax. Among the topics considered are the taxation of corporations and corporate distributions, corporate reorganizations and readjustments, the personal holding company surtax and the accumulated earnings tax, the taxation of partnerships, and of corporations electing to be taxed as partnerships. Two hours a week second semester. MR. LOWNDES

INTERNATIONAL LAW. A survey of public international law of peace, as evidence especially in decisions of national and of international courts; the drafting and interpretation of treaties; the nature and handling of international claims; the organization and jurisdiction of international tribunals, with special reference to the International Court of Justice; developments with respect to the codification of the law. Three hours a week second semester. (In case an insufficient number of students enroll for this course, special arrangement is made for law students to take graduate courses in this field in the Department of Political Science.)
MR. WILSON

INTERNATIONAL ECONOMIC RELATIONS. Legal framework of U. S. foreign trade and investment; foreign trade and investment laws of selected foreign countries; function of international economic law; international economic agreements; problems of foreign trade and investments. Three hours a week first semester. MR. BAADE

LABOR RELATIONS. A study of the law relating to collective bargaining and concerted labor activities, including the National Labor Relations Act and related legislation, the legal aspects of strikes, boycotts and picketing, the negotiation and administration of collective bargaining agreements, procedures for the settlement of labor disputes, and relations between the union and individual employees. Four hours a week first semester. MR. LIVENGOOD

LABOR STANDARDS. Government regulation of conditions of employment, including the Fair Labor Standards Act and other wage-hour and child-labor statutes, unemployment insurance and other social security legislation, employers' liability and workmen's compensation acts, and related laws establishing minimum standards for the creation, continuance and termination of the employment relationship. Two hours a week second semester. MR. LIVENGOOD

PATENT LAW (and related fields). A short survey of the law relating to patents and trademarks, with some coverage of copyrights, primarily to give the general practitioner a foundation in these areas to collaborate effectively with specialists. Special attention is given to overlapping problems in above-mentioned areas. One hour a week second semester. MR. OLIVE

PUBLIC REGULATION OF BUSINESS. Study of the federal antitrust laws and their common-law background, with emphasis on the economic policies involved. As a corollary of critical examination of the Sherman Act, Clayton Act, Federal Trade Commission Act and related legislation designed to enforce competition as the primary control of the economic system, some consideration is given to legal measures which supplement or replace competition, such as direct regulation of business and government intervention by public loans, guaranties and ownership. Three hours a week second semester. MR. LIVENGOOD

TAX AND ESTATE PLANNING. See Property Courses, page 318, for description. Two hours a week second semester. MESSRS. BOLICH AND LOWNDES

UNFAIR COMPETITION. See Business Courses, page 317, for description.

WORKMEN'S COMPENSATION SEMINAR. The main elements of Workmen's Compensation Law of the United States are covered through the assignment of typical office problems on which legal memoranda or opinions are prepared. Two hours a week first semester. MR. LARSON

WORLD LAW. This is a discussion seminar open to students of the Law School and the Political Science Department, and to a limited number of other students with satisfactory backgrounds. The emphasis of this course is around those aspects of National law and International law which have an important influence on weakening or strengthening a world legal order. Detailed attention is given to the United States judicial decisions, other laws, and relevant policies effecting the relation of the United States to such a world legal system. Special attention is also given to decisions of the International Court of Justice and to Constitutional treaties. The course will not duplicate the material in the regular course on International Law. Efforts are made through the seminar discussions to develop an adequate concept of world law. Two hours a week second semester.
MESSRS. LARSON AND MCCLURE

General Courses

COMPARATIVE LAW. An examination and comparison of the law of selected jurisdictions on certain specific topics. The history, sources, and methods of the civil law will be investigated, discussed, and compared with those of common law countries. Three hours a week second semester.

CONFLICT OF LAWS. A study of the special problems which arise when the significant facts of a case are connected with more than one jurisdiction. Recognition and effect of foreign judgments; choice of law; federal courts and conflict of laws; the United States Constitution and conflict of laws. Three hours a week second semester. MR. KRAMER

EQUITABLE REMEDIES. A survey of equitable remedies in general (including enforcement of equity decrees) and of important parts of the fields of equity and restitution that are not covered in other courses. Two hours a week first semester. (Not offered 1959-60.)

FAMILY LAW. Marriage; annulment; divorce; separation; property rights. Two hours a week first semester. MR. GANTT

JURISPRUDENCE. Discussion of some of the basic problems of classical and contemporary juristic theory, with applications to cases and statutes. Open to all graduate students, and, with the consent of the instructor, to qualified second and third year students. Three hours a week first semester. MR. HARDIN

LEGAL HISTORY. A study of the development of fundamental English and American legal institutions, with primary emphasis upon the establishment and growth of American law from the colonial period to the present. Two hours a week second semester. (Not offered in 1960-61.)

NORTH CAROLINA STATUTES AND DECISIONS. A study of selected statutes of North Carolina with discussion of their application, and an analysis of the decisions of the Supreme Court of North Carolina construing them. Two hours a week second semester. MR. BRYSON

TORTS. The bases of liability in damages for personal injuries and injuries to property; bases other than fault; negligence; intentional infliction of harm. Procedure in jury trials; proof of negligence; causation and "proximate cause"; defenses. Special rules applicable to occupiers and owners of land, motor vehicle accidents, suppliers of goods and remote contractors. Misrepresentation and faud; defamation; assault and battery; false imprisonment. Three hours a week first semester, two hours a week second semester. MR. MAGGS

Procedure and Practice Courses

CIVIL PROCEDURE. A study of the adjudication of civil cases with special emphasis on the Federal Rules of Civil Procedure. Three hours a week throughout the year. MR. PASCHAL

CIVIL PROCEDURE II. Parties to a civil action; right to jury trial; the division of function between judge and jury; instructions; jurisdiction; res judicata; appellate procedure. Three hours a week first semester. MR. PASCHAL

EVIDENCE. A study of the common-law rules of evidence, including the requirements of relevancy and materiality; competency and privilege of witnesses, examination and cross-examination, burden of proof and presumptions, judicial notice, and functions of judge and jury. Two hours a week throughout the year. MR. STANSBURY

MEDICO-LEGAL PROBLEMS SEMINAR. A study of the relationship between law and medicine and the legal and medical professions, with particular emphasis on medical proof in litigation, legal psychiatry, and other areas in which interdisciplinary approaches are especially profitable. Members of the Duke Medical School Faculty cooperate as guest lecturers. Two hours a week first semester. MESSRS. BRYSON AND HARDIN

TRIAL PRACTICE. A study of the function of the advocate in the trial of law suits, with emphasis upon methods of pre-trial preparation and development of facts in court, typical uses of rules of procedural and substantive law in trial proceedings, and tactical and ethical aspects of problems which confront the trial lawyer. The course is open to third-year students who have completed the course in Evidence. Two hours a week second semester. MESSRS. BRYSON AND HARDIN

LEGAL PROFESSION. Lectures, discussions, and reading concerning the ethical problems and professional responsibilities of the lawyer. One hour a week second semester. MR. HARDIN

NORTH CAROLINA PRACTICE. A study of the steps in a civil action at law from the issuance of process to the entry of final judgment including service of process; appearance and waiver of process; selecting the jury; various motions made during the trial; submission of case to jury; verdict; judgment; noting and perfecting appeal. Also included are such topics as jurisdiction of various courts in North Carolina; venue; trials without a jury; provisional remedies and special proceedings. Two hours a week first semester. MR. BRYSON

Legal Research and Writing

RESEARCH AND WRITING I. Classroom instruction and individual problems in the use of law books, the preparation of memorandums of law, and moot court briefing and argument. The first year of a two-year program designed to familiarize the student with the materials and methods of legal research and legal writing. Two semester-hours credit. MESSRS. EVERETT AND PASCHAL

RESEARCH AND WRITING II. The second year of the two-year program of research and writing. In addition to more advanced work of the kind involved in the first-year program, the student will assist in evaluating the work of first-year students and in judging first-year moot court arguments. Required of all second-year students. One semester-hour credit. MESSRS. EVERETT AND PASCHAL

Upon recommendation of the Committee on Graduate Study, seminars not listed in the *Bulletin of the School of Law* may be created or arrangements made for supervision of special research by individual graduate students in any subject.

All matters presented in the *Bulletin of the School of Law* are subject to change as the University or the School of Law may deem expedient.

THE SCHOOL OF MEDICINE

Registration of Students, Monday, September 12, 1960

General Information

Introduction

Duke University Medical Center was established in 1930, through the munificent gift of the late James B. Duke. The School of Medicine and Hospital are located in the same building situated on the campus of Duke University. Both have been planned to insure the greatest correlation between the various departments. The students in the School of Medicine are accorded the same privileges and are subject to the same laws and regulations as those of the other divisions in the University. Seventy-six students are admitted to the first year class each year and on September 14, 1959 three hundred and twelve students were enrolled.

Aims of the School

Duke University School of Medicine, from its beginning in 1930, has maintained as it major objectives: (a) the cultivation and teaching of medicine on a strictly scientific basis; (b) the correlation of medical research with medical teaching at all levels of its teaching, and (c) the continuous search for and experimentation with new or improved methods of teaching scientific medicine. In order to attain these objectives, the School has been organized, its physical plant planned, and its administrative structure constituted so that there exists the closest possible academic and physical relationship between undergraduate and graduate work in the University and the School of Medicine, and also between the basic medical sciences and the clinical sciences within the School and its integrated teaching Hospital. The professional staff of the School is composed of two general categories, those with permanent appointment and unlimited tenure, and those with temporary appointment. The latter, the much larger group, is maintained on a highly fluid basis, which makes possible a high degree of selectivity in appointment for academic training and scientific research. The smaller group of permanent appointees has in every individual a background characterized by academic and scientific attainment. The professional, academic, and scientific environment created by the staff is thus such as to engender scientific inquiry and to encourage diligent pursuit of the medical sciences in all their relationships. The staff at all levels devotes its entire professional time to the activities of the Medical Center.

Degrees

Doctor of Medicine. The degree of Doctor of Medicine is conferred on those who have completed, to the satisfaction of the Committee on Health Affairs, the sixteen terms of nine weeks each of the curriculum of the School of Medicine, and have signed an agreement that they will spend at least two years of the succeeding three years in hospital or laboratory work acceptable to the Committee on Health Affairs. As a guarantee of this pledge the diploma is deposited in the Treasurer's office until after the completion of this training. At the time of graduation a temporary certificate is issued which must be returned prior to the delivery of the permanent diploma. Failure to fulfill this agreement constitutes a waiver of any claim to possession of the diploma and the degree of Doctor of Medicine. This required period of approved hospital or laboratory may be active duty in the Armed Forces or U. S. Public Health Service.

Bachelor of Science in Medicine. After the completion of eight terms in Duke University School of Medicine, Duke University, on the recommendation of the Committee on Health Affairs, grants the degree of Bachelor of Science in Medicine to medical students who have completed creditable investigative work, prepared an acceptable report of the investigation, and passed an examination upon the subject of investigation before an advisory committee. Students who elect to undertake work toward this degree must obtain written permission from the Committee on Health Affairs after approval of their program by the head of the department in which the work is to be done. No credit toward this degree is given for additional college work. All students in good standing are encouraged to undertake such investigative work as they may elect with the approval of the head of the department in which they wish to work.

Master of Science and Doctor of Philosophy. Work leading to each of these degrees may be pursued in the preclinical departments. For further details concerning conditions under which these degrees are awarded consult the Bulletin of the Graduate School of Arts and Sciences.

Training Program for Clinical Investigators. Medical students who have completed the first two years of the curriculum, members of the Duke Hospital resident staff, Postdoctoral Fellows in the clinical and preclinical departments and qualified graduate students may be admitted to the special Training Program for Clinical Investigators to be instituted in the autumn of 1959 and conducted annually thereafter. The Program lasts nine months and includes three types of activities: (1) Formal didactic training and seminars including a review of mathematics with emphasis on calculus, biostatistics, fundamentals of electronics, logic and the scientific method, genetics, and advanced

study in cytology, biochemistry, physiology, pharmacology, microbiology, and biophysics. (2) An extensive series of laboratory experiences in which the participants perform a set of important experiments derived from each of the disciplines listed above and in which they learn the use of important and complex tools and techniques not ordinarily available in undergraduate courses. (3) A research problem conducted either in the general laboratory set apart for this program or in the laboratory of one of the faculty with whom the participant chooses to work. All aspects of the program will be housed in especially constructed quarters in the W. B. Bell Medical Research Building.

Credit will be given to undergraduate medical students equivalent to one elective quarter for participation in this program. The Graduate School of Duke University will also accept the total of the first two years of medical school plus participation in this program as residence time toward the degree of Doctor of Philosophy. In addition, the individual student must satisfy the language and dissertation requirements of the Graduate School and any additional requirements stipulated by the department in which he elects to obtain this degree.

The objective of the program is to provide a more sound basis for the future work of those hoping to devote their lives to a career in investigative medicine and biology. Applicants will be admitted to the program on the basis of past academic performance, evidence of research bent and curiosity, and motivation toward an academic research career. It is suggested that medical students undertake this program at the completion of the first two years of the curriculum and then return to the normal clinical medical curriculum. Such students should also expect to undertake one or two years of a postdoctoral research fellowship in the course of their residency training in order to prepare themselves fully for a research career.

Student Government

Members of the student body elect an Honor Council, in which each class is represented. It is the duty of the Honor Council to hear all cases involving breaches of conduct on the part of members of the student body. All students entering the School are required to comply with this system of government.

Medical Care

Elbert L. Persons, A.B., M.D., *Physician-in-Charge and Professor of Medicine.*
Caroline E. Helmick, A.B., M.D., *Woman's Campus Physician, Associate in Preventive Medicine.*

With the exceptions noted below, full medical and surgical care is furnished to all regularly matriculated medical students of the Uni-

versity who have paid the quarterly General Fee. This service is under the direction of the Physician-in-Charge with the co-operation of the staff of the Duke University Medical Center. It includes hospitalization (limited to thirty days), medical and surgical care, drugs, dressings, x-ray studies, and ward but not special nursing. A charge for board is made at the same rate as in the University dining halls. Refraction of eyes and treatment of teeth and of all chronic and pre-existing conditions, such as diseased tonsils, hernia, elective surgery, chronic skin conditions, endocrine disturbances, etc., or accidents or illnesses occurring during vacations or while off the campus are not included in this service. The cost of any necessary braces and orthopaedic appliances, as well as of special nursing must be borne by the patient. If the student has insurance providing hospitalization, surgical, or medical benefits, the benefits shall be applied to the cost of his medical care.

Facilities

Duke Hospital. Duke Hospital, an integral part of the Duke University Medical Center, has every modern convenience for the diagnosis, proper care, welfare and comfort of the patients, both ward and private, white and colored, whether they come from Durham or from a distance. It has 666 beds, including 30 bassinets for newborn infants, and a nursery for 20 prematures. Medicine, including dermatology and neurology, has 77 ward beds; surgery, including urology, otolaryngology, ophthalmology, and orthopaedics, 135 ward beds; obstetrics, including gynecology, 59; psychiatry, 30; and pediatrics, 75 beds for children and 50 for infants. There are 290 beds in private and semiprivate rooms, 20 air conditioned operating rooms, 4 obstetric delivery rooms, and ward and student laboratories. Offices and examining rooms for members of the Medical Faculty are located in the Hospital and Out-Patient Department. A new four million dollar air-conditioned wing, recently completed, added 100 private beds, private and public clinic facilities, 10 operating rooms, expanded x-ray services, an ambulant patients' dining room, modern instructional space and improved general service facilities. The Hospital has been approved for internships and residencies by the Council on Medical Education and Hospitals of the American Medical Association, and is approved by the Joint Commission on the Accreditation of Hospitals.

Duke Hospital and its Out-Patient Clinic were opened for patients on July 21, 1930. The average daily census of hospital patients during the past year was 475; 219,600 visits were made to the out-patient clinics during the same period. 50% of the hospital patients oc-

cupied ward beds and 50% of the clinic visits were made to the public out-patient clinics. Patients came from almost every county of North Carolina and from many states of the Union and several foreign countries.

The Private Diagnostic Clinic was organized to co-ordinate the diagnostic studies, and to give better care to the complicated problems arising in the examination of private patients. The Clinical Staff of the Duke University Medical Center forms the professional staff of this clinic. The offices and examining rooms are in Duke Hospital, and all of the laboratory and diagnostic facilities of the Hospital and School of Medicine are utilized by the Clinic.

Veterans Hospital. The Durham Veterans Administration Hospital is located within walking distance of the School of Medicine. This 485 bed general hospital was opened in April, 1953. Its full-time professional staff are all members of the faculty of Duke University School of Medicine and the house staff training at Veterans Hospital and Duke Hospital are closely integrated.

Library

Judith Farrar, A.B. (USC, 1928), B.S. (Columbia, 1929), *Librarian and Professor of Medical Literature.*

Mildred Perkins Farrar, A.B. (Congress, 1893), *Assistant Librarian.*

Rachel Chester Roth, A.B. (Hood, 1951), M.F.A. (Iowa State, 1953), M.S. (Columbia, 1957), *Librarian, Trent Collection in Medical History.*

Polly Gibbs Miller, A.B. (Meredith, 1950), *Bibliographic Librarian.*

"To study the phenomena of disease without books is to sail an uncharted sea, while to study books without patients is not to go to sea at all."—SIR WILLIAM OSLER.

In addition to the General Library of Duke University and the departmental libraries of biology, chemistry, physics, etc., which have 1,390,540 volumes available for medical students, Duke Hospital Library contains 68,400 volumes of American and foreign medical literature and subscribes to 758 current American and foreign medical and other scientific journals. The Trent Collection contains approximately 4,000 books in the field of medical biography and history and 2,500 autographs and manuscripts. These books and journals are available daily from 8:30 A.M. to 11:00 P.M. for the students, nurses, staff, and medical profession.

GENERAL INFORMATION FOR APPLICANTS

Years of college work required for entrance	3
Resident and Non-resident tuition and fees for first year	$1200
Estimated cost of equipment (books, supplies, etc.) first year	$265
Estimated minimum cost of room and board for first year	$600
Amount of non-refundable application fee	$10
May give early decision to applicant preferring this school but offered a place in another school	Yes
Medical College Admission Test required	Yes

1961-62 FIRST YEAR CLASS

Size of first year class	76
File application for admission between	Aug. 15, 1960 Dec. 1, 1960
Applicant will be notified of action on his application between	Nov. 1, 1960 Feb. 15, 1961
Amount of deposit fee required on or after January 15, 1961, to hold place in class if applicant is accepted	$50
Date entering class starts program	Sept. 11, 1961

Address inquiries to:

Committee on Admissions
Duke University School of Medicine
Box 3710, Duke University Medical Center
Durham, North Carolina

Admission

I request that great care and discrimination be exercised in admitting as students only those whose previous record shows a character, determination and application evincing a wholesome and real ambition for life."—James B. Duke.

Intelligence, character and integrity are the essential qualifications for admission.

A premedical student should be aware of the importance of a well-rounded general education as a preparation for the study of medicine and not limit himself to scientific courses. Experience has shown that the medical student with a considerable science background enjoys no advantage over his classmates with less premedical science preparation. The Admissions Committee believes that the manner in which the college load is carried is of greater importance than the specific subjects taken. The premedical student would be better advised to secure a knowledge of the principles and a thorough appreciation of the interrelations of the basic sciences than to accumulate credits in many courses. He should learn how to work independently, to observe critically and to analyze rather than merely to store the information presented. Good study habits and use of time are perhaps the most important tools a student can bring to the study of medicine. His choice of studies beyond those required for admission should be governed by his own chief interests and by the intellectual stimulus to be derived from the work. In general he should avoid courses in subjects which are included in the medical curriculum.

Application for Admission

Application forms may be obtained by writing to the Secretary of Admissions, Box 3710, Duke Hospital, Durham, N. C. Please do not send a request before August 15th. Formal applications will be accepted by the Committee on Admissions only between 15 August and 1 December.

Due to the large number of qualified applicants to all medical schools, each student is urged to apply to at least four schools. In the event an applicant is accepted by another school before he has heard from Duke, and is forced to secure that acceptance with a deposit, he may request an earlier consideration by our Committee.

Requirements for Admission

1. A minimum of ninety semester hours of approved college credit is necessary for admission to the school. It must include:

(1) Two years of English of which the second year should be chiefly expository English composition.
(2) Two years of chemistry, the first inorganic and the second analytic and organic.
(3) One year of college physics.
(4) One year of biology.
(5) One year of mathematics.

2. Medical College Admission Test. This test is required of all applicants. It is administered by the Educational Testing Service, P. O. Box 592, Princeton, New Jersey. This test is given at many of the colleges throughout the country in May and November of each year. Arrangements for taking this test should be made by the student through his premedical advisor.

Selection

Selection is made between September 15 and February 15 for the students entering the following September. The data on each candidate are carefully screened by the Committee on Admissions. A personal interview will be arranged for those with satisfactory credentials. If the distance from Durham is permissible the interview is conducted here; otherwise the candidates are referred to our regional representatives. Many factors are evaluated by the Committee in the selection process. In the end those students are admitted who show the most promise for exceptional future practice of medicine. The candidate is notified as soon as possible whether or not he has been accepted. If he has been accepted it is necessary to send a deposit of $50.00 by the succeeding January 15 in order to insure enrollment. This deposit is applied toward tuition. Inasmuch as admission must be offered a considerable period in advance of matriculation the admission must be provisional upon the successful completion of the remaining college work. In addition a physical examination is necessary prior to enrollment.

Advanced Standing

Applications for transfer into the second and third year classes will be considered only if space permits. No applications for entrance to the fourth year will be considered. For entrance to the third year, Part I of the National Board Examination will be required as evidence of satisfactory accomplishment in the subjects of the first two years.

Curriculum

The academic year consists of thirty-six weeks. For third and fourth-year students there will be four terms of nine weeks each. In the first two years the instructional program does not adhere rigidly to the above terms, but rather involves interdepartmental correlations. The third year is made up of nine-week terms of medicine, surgery, obstetrics-gynecology and psychiatry. The fourth year is comprised of nine-week terms of medicine, surgery and pediatrics and one term as an elective. Elective courses have been organized for small groups, or the time may be utilized in independent work (including research) in any department, clinical or preclinical. Arrangements for taking such courses or doing other work are made through the Curriculum Committee. The entire curriculum is shown in the accompanying table.

Students are encouraged to take a portion of their medical school work at other schools. Permission must be obtained in advance from the Committee on Health Affairs and the full tuition at Duke must be paid for that quarter. If the charges at the school at which the work is taken are less than those at Duke they will be paid by Duke and if more the difference must be made up by the student. At the completion of the work in another school an examination in the subject may be conducted by the department at this medical school.

Promotion

Promotion committees composed of the heads of the departments offering instruction in those years periodically review the records of students. The Committee on Health Affairs, acting on recommendations of the promotion committees promotes those qualified, warns those whose work is unsatisfactory, places on probation those whose work is very unsatisfactory and requests the resignation of those considered unpromising candidates for the degree Doctor of Medicine. A student wishing to appeal this decision may do so to the chairman of the Committee on Health Affairs within two weeks of his notification.

The Committee on Health Affairs reserves the right to require the withdrawal of any student at any time if, in the opinion of the majority of its members, he should not continue his course.

At the end of the second year a comprehensive examination will be given covering the work of the first two years. Each student will be requested to take Part I of some State Board examination or the National Boards.

Financial Information

Fees and Expenses

Listed below is a table of the approximate expenses per nine months academic year of the School of Medicine:

Tuition and fees	$1200.00
Board	600.00
Room	270.00
Books	100.00
Laundry	100.00
Insurance, instruments and incidentals*	150.00
	$2420.00

One fourth of the total fees is payable at the beginning of each nine-week term. A fine of $5.00 is charged for late registration after the first 5 days of the term. No credit will be given for any term in which the tuition has not been paid whether the work has been done here or elsewhere.

It is not advisable for students to attempt outside work to defray their expenses during the academic year. The curriculum is so crowded that the results usually are disastrous to their health and academic standing.

Information about rooms in the Men's Graduate Center and Epworth Hall on the Woman's College Campus may be obtained by writing to the Duke University Housing Bureau, Duke University, Durham, N. C. Information concerning loans, fellowships, and awards is given in the *Bulletin of the School of Medicine.*

* Microscope, sphygmomanometer, ophthalmoscope, otoscope, and other equipment, which are required of each student and which must conform to rigid standards, may be obtained on a rental basis from the University.

Departments of Instruction

Anatomy

The required courses of instruction in human anatomy constitute about half of the integrated curriculum of the first year. The gross anatomy of the head, neck and trunk is studied during the first 14 weeks, histology during the first 10 weeks, neuroanatomy during the 28th to 36th weeks. The gross anatomy of the limbs is studied during the 28th to 36th weeks. All of the above are integrated with the other material studied during the first year. Emphasis is placed upon the study of the material in the laboratory. In an attempt to utilize more fully the laboratory time, audio-visual educational methods are employed as fully as possible. These techniques consist of colored motion pictures of demonstration dissections, colored lantern slides, and motion pictures, both embryologic and neurologic. All of the instruction is designed to be as informal and as nearly individual as possible. General principles and the functional viewpoint of living anatomy are stressed in the hope that the student may be stimulated to secure a working knowledge of anatomy in the broadest sense. Whenever possible, fresh tissues and living cells are made available for examination, and clinical cases exemplifying anatomical principles are studied whenever they are available. Through the co-operation of the Department of Radiology, the students are given an opportunity to study portions of the living human body as revealed by the fluoroscope and roentgenograph. The following elective courses are offered:

Demonstrations in Anatomy. Using dissections already prepared, weekly demonstrations of selected regions or systems are made by the members of the group. Sixth quarter—Two hours per week by arrangement. Second-year students in groups of 10.

Review in Anatomy. During the sixth quarter, a review in anatomy will be presented by the audio-visual education methods outlined above, covering gross and neuro- anatomy, and histology.

Special Neuro-anatomy. Laboratory work and conferences upon selected portions of the human central nervous system. Limited to 6 junior or senior students. Two hours weekly by arrangement.

Brain modeling. Free-hand reconstruction in clay, from gross and

sectioned material, of the chief tracts and nuclei of the human brain stem. By arrangement—4 to 10 students.

Experimental Neurology. An operative and laboratory study of the effect of various lesions upon the central and peripheral portions of the nervous system. 4 to 8 junior and senior students by arrangement. Prerequisite—operative surgery.

Advanced Studies in Anatomy. These may be arranged at any time under the direction of the various members of the staff.

Review for Orthopaedic Anatomy. A one hour weekly review of the anatomy related to orthopaedic surgery.

Review of Surgical Anatomy. A one hour weekly review of the anatomy related to general surgery.

Anatomy Seminar. One hour weekly meeting of students and staff in which current research problems in anatomy are presented.

Biochemistry

The required course in biochemistry for first-year students is given over a period of twenty weeks in mid-year. The first phase is devoted to a survey of the chemistry of the materials fundamental to all life, proteins, fats and carbohydrates, and the nature of enzymatic action. This is followed by consideration of those events in intermediary metabolism common to the life of all mammalian cells. The special metabolism of muscle, kidney, bone, erythrocytes, liver, connective tissue, and the chemical aspects of digestion, respiration, electrolyte, acid-base and fluid balance are presented with relation to the study of the physiology of these organs so as to facilitate integration and correlation of the two disciplines.

Since the success of the students in this course is largely determined by the adequacy and ready availability of their premedical training, it is urged that all students review the fundamental laws, theories, and facts of chemistry before the beginning of the course. A circular outlining the topics requiring special attention is sent to all students upon admission. Additional copies of the circular may be obtained from the Dean's Office.

Biochemical Research. The facilities of the department, including various types of research equipment and the clinical material of the blood chemistry laboratory, are available to properly qualified students for independent or supervised investigations. Chemical investigations of problems in biochemistry or in conjunction with the clinical and pathologic departments also may be conducted.

Chemistry of Proteins and Enzymes. A two-hour seminar is given weekly throughout the autumn, winter and spring terms in alternate years.

Intermediary Metabolism. A two-hour lecture course and seminar conducted during autumn, winter, and spring terms. Given annually.

Advanced Seminar in Nutrition. A three-hour lecture and seminar course in modern nutritional concepts. Given alternately with intermediary Metabolism during the autumn term.

Biochemistry of Disease. A seminar course meeting once weekly to discuss the etiology and pathogenesis of metabolic diseases from the biochemical viewpoint. Given in alternate years in the spring term.

Medicine

Clinical Diagnosis. This course is initiated in the third term of the second year by introductory lectures, case discussions, and instruction in methods of physical examination and history taking. Early in the course, students begin work at the bedside in the examination of selected patients. The emphasis throughout is placed on instruction individually and in small groups. The interpretation and pathologic physiology of abnormal findings are stressed. Instruction in the more specialized methods of examination is provided by coordinating the lectures, case discussions and individual student instruction from the departments of Medicine, Neurology, Obstetrics and Gynecology, Pediatrics, Psychiatry, Radiology, and Surgery. In addition, the lectures and laboratory sessions in Clinical Microscopy are coordinated with the over-all program. This plan of teaching continues in the fourth quarter, when special emphasis is placed on student correlation of the history, physical findings, and pathologic physiology in the individual patient problem.

Clinical Microscopy is given in the second year. This course, along with lectures and assignments providing practice in history taking and physical diagnosis, comprises an introduction to medicine designed to equip the student to participate in patient care on the wards and in the clinics. The essentials of hematology are reviewed. Laboratory work includes blood cell counts, the preparation and interpretation of blood films, and the examination of fresh material, such as urine, stools, spinal fluids, sputum, transudates, and exudates. Second-year and senior students are given opportunities for special work and for investigation. This course is supplemented in the junior and senior years by hematology conferences and by daily ward and laboratory rounds.

Cutaneous Medicine and Syphilology. Instruction consisting of lectures, seminars, the study and treatment of patients in the outpatient clinics and on the wards is offered.

Junior and Senior Medicine. The medical students are assigned as clinical clerks to the medical wards of Duke Hospital and the Durham VA Hospital and to the medical outpatient clinic.

Division of Endocrinology

The Division of Endocrinology was organized by Dr. E. C. Hamblen in 1936 as a division of the Department of Obstetrics and Gynecology. In 1955 it was reorganized as an integrated service with a staff drawn from several clinical and preclinical departments. Its objective is to give comprehensive training in basic and clinical endocrinology and metabolism particularly at the postgraduate level. Although individual senior staff members have their own special clinical and research programs, the division is organized so that clinics, conferences, ward rounds and seminars are participated in as joint ventures by the entire staff. The endocrine laboratory and its services are available to all members of the staff equally. Resident physicians from Medicine, Obstetrics and Gynecology and Pediatrics rotate through the endocrine division. At any one time there are usually four residents assigned to the division. Clinical and research fellows and trainees are assigned to individual senior staff members, depending on their major interest, but all participate essentially equally in the clinics, teaching rounds, conferences, etc.

The Endocrine Clinic meets three mornings and the Metabolism-Diabetes Clinic one morning each week. All fellows have the opportunity to attend these clinics and in addition the clinical fellows assist in the care of the private patients with endocrine and metabolic disturbances including diabetes. Twice a month the endocrine clinic meets jointly with the neurosurgical tumor follow-up clinic to review patients with pituitary tumors and related brain lesions. Ward rounds on in-patients are held from 4-5 P.M. four afternoons a week. An endocrine conference is conducted weekly. In addition, each of the supporting service (Medicine, Obstetrics and Gynecology and Pediatrics) has special conferences, lectures and seminars of endocrine interest which are available to the staff.

Microbiology

Bacteriology, Immunology, and Mycology. The required course is given in the first term of the second year. An intensive study is made of the common bacteria, fungi, and viruses which cause disease in man. The scope of the laboratory course is reasonably wide and acquaints the student with all the methods and procedures employed in bacteriologic laboratories. Most of the lecture time is devoted to the immunologic and epidemiologic aspects of infection. The instruction is designed to give the students a clear conception of: (1) how organisms gain entrance to the body, (2) the type of poisons which they produce, (3) the nature of immune bodies which are

produced by the host, and (4) the methods of preventing the disease by active and passive immunization.

Research Bacteriology. Opportunities for original investigations are afforded a few specially qualified students.

Clinical Bacteriology. During their clinical clerkships on medicine (one quarter each for junior and senior classes), the students may perform the routine and special bacteriologic work of the patients assigned to them on the teaching service, under the direction of the Department of Bacteriology and in parallel with the Biologic Division of the medical clinic.

Obstetrics and Gynecology

Second year students receive 22 hours of instruction in the fundamentals of Obstetrics, Gynecology and Endocrinology during their course in physical diagnosis in the sixth quarter.

During one quarter of the junior year each student group attends Ward Rounds at 8:30 A.M. on Mondays, Wednesdays, and Saturdays; Preoperative and Predelivery Conferences on Tuesdays, and Fridays; tutorials on Mondays, Tuesdays and Wednesdays; Pathology Conferences on Thursdays and Staff Meetings on Fridays with members of the staff and the staff of other departments. They also attend an Endocrine Clinic once a week; an abnormal Obstetric Clinic once a week; and the regular Out Patient Clinic five times weekly for nine weeks.

The students during their nine weeks in the junior year are also assigned patients on the Obstetric and Gynecologic Wards.

Pathology

General Pathology: The course in general pathology is given during the first and second terms of the second year. All the work of the class is done with small groups, each under the guidance of a senior instructor and his junior assistant. The histologic aspects of the pathologic processes are studied co-incidentally with the gross anatomic and physiologic alterations of the tissues, thus maintaining a unity of conception of disease. As the various pathologic processes and the diseases arising from their elaboration are studied by the student groups, assignments involving reports on the study of groups of cases are made by individual students. The group work and the individual student reports are supplemented by weekly conferences involving the class as a whole and dealing with problems presented by current autopsies and with other problems of general importance. Student collaboration in post-mortem studies is required. Cases thus studied are presented by the student before the class under

the direction of the staff; this takes the form of a clinical-pathologic conference in which each student plays a particular role.

Elective Courses. Special courses in pathology are given to students who have completed the course in general pathology. These courses are available through special arrangement.

Clinical-Pathologic Conference (CPC): A weekly clinical-pathologic conference for advanced study is held on Saturdays. It is open to all persons interested, but is designed especially for the Hospital and Medical School Staff. Attendance by all the students is expected but is optional. Miscellaneous weekly pathologic conferences dealing with current cases under treatment on the various services are held for instruction of the staffs concerned.

Student Research. Research facilities are provided for competent students. Those who show an interest in investigative work are given every encouragement and are allowed to work independently or in collaboration with the staff.

Postgraduate Instruction: The staff of the Department is composed of senior non-resident and junior resident members. The resident staff consists of interns, assistant residents, and a resident; all of these are active teachers as well as advanced students of disease. Ample opportunity for the development of a career in the field of pathology is provided for these men.

Medicolegal Instruction: The department works in close co-operation with the North Carolina State Medical Examiner System. Special medico-legal investigation for others are undertaken from time to time. The department collaborates with other departments of the School of Medicine and Law in a course in legal medicine that is given in alternate years.

Pediatrics

First-year medical students receive twenty hours instruction in normal growth and development and in patterns of behavior. There is a nine weeks course in pediatrics during the junior or senior year, the time being equally divided between clinic and ward services. Students participate in the morning subspecialty clinics, the well baby clinics and afternoon general medical pediatric clinics, seeing both new and return patients. Each week a one hour conference is held at the end of the following specialty clinics: hematology, metabolism, neurology, cardio-renal, allergy, convulsive disorders, behavior problems, endocrinology and well baby care. Each afternoon, there is a one hour conference in the general pediatric clinic with informal presentation and discussion of patients. On the wards, the students assist as clinical clerks and are assigned patients in rotation. They make daily rounds with the staff. Pediatric nursing procedures are

demonstrated by the nursing supervisor. The different subspecialty groups—cardiology, hematology, allergy, endocrinology, dermatology, metabolism—make ward rounds weekly. A joint conference with the senior and resident staff is held twice weekly on topics of pediatric interest, clinicopathologic discussions, case presentations and for guest lecturers. There is a weekly radiology conference at which all interesting cases of the week are presented and discussed with the radiologist. Each student prepares a paper on a pediatric subject of his own choosing which they present to the entire group in an informal discussion. Senior students may spend two weeks in general practice with Instructors in General Practice.

In addition to the ten pediatric first year residencies, there are four in which six months each are spent in obstetrics and pediatrics for graduates who plan to enter general practice. Six second-year residencies and three third-year residencies are available.

Physiology and Pharmacology

The course in medical physiology is given during the first year. There are lectures, laboratories and conferences each week in which are presented the general principles of human physiology and their general application to the practice of medicine. The physiology, anatomy and biochemistry courses are closely integrated.

The course in pharmacology is taught in the Spring of the second year. Lectures, laboratories and conferences deal with the mode of action of drugs in terms of biochemical and physiological processes.

Physiologic and Pharmacologic Research. The facilities of the department include modern types of research equipment. There are special facilities for research in the fields of respiration, high altitude physiology, circulation and cellular metabolism. Properly qualified students are encouraged to undertake original research in physiology and pharmacology under direction of various members of the staff.

Seminars. Each fall term a seminar for graduate students in physiology is conducted by the staff.

Preventive Medicine and Public Health

Preventive Medicine and Public Health. In the first year there are four lectures given to provide some basic orientation predicated upon the fact that disease has a community as well as a personal aspect and that the social component of illness is an important force in the work of the doctor as well as in the life of the community. The student is introduced to disease as a mass or community problem and to medicine as a social institution.

In the second year there is a series of lectures, clinics, and con-

ferences. These emphasize again the role of the physician as a member of his community. The methods and goals of preventive medicine are illustrated and discussed in a series of conferences dealing with specific diseases. The student is oriented in the methods of public health administration with particular emphasis on the role played by the practicing physician. The problems involved in the collection of vital statistics and the methods of epidemiology are considered. Special attention is given to the factors involved in providing medical care to the community. The physician's role in legal and industrial medicine are also considered. The course is designed primarily to give the student a point of view which he may incorporate in his future activities in clinical medicine.

During the clinical years a series of correlative clinics are conducted with the cooperation of the various clinical departments.

Psychiatry

The objectives of the undergraduate teaching program in the Department of Psychiatry are to: (A) Bring to the medical student the basic information which he requires to comprehend his role in the community as a physician, to understand his relationship with patients, to appreciate the impact of disease upon the patient, and to understand the influence of the psychic processes upon the behavior and physiological functioning of the patient; (B) Provide the student with the knowledge of interviewing techniques and psychotherapeutic skills which can be utilized in the general practice of medicine.

Instruction begins in the first year. Approximately 76 hours are devoted to personality development, maturing and aging, and the effect of the environment upon the individual. Teaching methods include lectures, the clinical demonstration of normal children, adults and patients, and small group discussions. During the second year, psychiatric concepts are presented which consider in some detail the topography of the mind, the common mental mechanisms, the concept of the unconscious, and the effects of these various factors on disease. Interviewing techniques are given considerable attention, and the student is given his first opportunity to observe and work with patients. In the third year, the student is assigned for a nine-week period to the In-Patient Service and to the Psychosomatic Service of the Department of Psychiatry. During this time, he has an opportunity to come in contact with patients who have a wide variety of emotional disorders. Emphasis is placed upon recognition and treatment of mental disturbances and the proper referral of seriously disturbed patients. During the senior year, the student, under close supervision, conducts psychotherapeutic interviews and observes the

psychotherapeutic efforts of a senior psychiatrist. One afternoon a week is allotted throughout the year for this purpose.

Specialty training in the field of Psychiatry is offered to professionally qualified physicians who have completed at least one year of internship. Completion of such training meets the requirements of the American Board of Psychiatry and Neurology. The major areas of residency training are the Psychiatric In-Patient Service, the Adult Out-Patient Clinic, Psychosomatic Medicine, and the Durham Child Guidance Clinic.

Radiology

Radiology teaching starts in the first year. X-rays are made on anatomy cadavers and these are studied by students during dissection. Radiologic discussions are presented to section groups. In the second year students, groups get further sectional training. An attempt is made to acquaint the student with the aids of roentgenology in diagnostic problems. The correct use of x-rays in diagnosis is stressed.

Between April and May, 1960 the Radiation Therapy Wing will be completed and opened. This is a 16 room addition to the Department of Radiology and will house the entire radiation therapy, cancer teaching and cancer research portion of the department. Two supervoltage rooms are being equipped, one with 3000 curie Cobalt 60 machine. The other room being equipped with Cesium 137 unit for head and neck, mouth and lip cancer. There will be one 280 kilovolt conventional x-ray therapy machine. The radium unit is complete with housing facilities and working area for 1000 milligrams of radium or Co_{60} equivalent. In addition to examining rooms and viewing rooms there will be one large lecture hall in which tumor clinics and student conferences will be held.

Therapeutic radiology is given each quarter in the senior year. Tumor clinics run throughout the year. At these sessions the general problem of the treatment of benign, inflammatory and malignant lesions by x-ray and radium is discussed, and accepted views of the combination of these therapeutic agents with surgery are emphasized. Representative cases are demonstrated, and the follow-up results are particularly stressed. The tumor clinic is active in all specialties.

A limited number of senior students are permitted to attend routine film reading sessions in the Department of Radiology. They are also instructed in the fundamentals of fluoroscopic examinations and shown the many pitfalls of the inexperienced fluoroscopist.

X-ray conferences are scheduled with each specialty in the X-ray Conference room with weekly schedules. All x-ray cases on the service of the preceding week are shown and briefly discussed for benefit of the house staff and attending students. Weekly conferences,

including the Ear, Nose and Throat, Orthopaedics, Neurosurgery, Thoracic surgery, Pediatrics, Cardiac, Gastro-intestinal, Urology, are held and used as part of the teaching program. Wednesday and Friday afternoons special x-ray conferences of x-ray pathology are held. X-ray pathology conference 5 to 6 P.M. each Wednesday afternoon in the autopsy room.

Each Wednesday evening a conference is held by the members of the x-ray staff and visiting radiologists. Difficult cases are brought up for discussion and diagnosis.

A regional x-ray conference is held the last Thursday in each month, alternating with the University of North Carolina.

A complete radioisotope laboratory facility is available for the diagnostic and therapeutic applications of radioisotopes. Radio-iodine is used routinely in the evaluation of thyroid function and in the treatment of hyperthyroidism and thyroid carcinoma. Other isotopes also are used clinically.

An investigative program using radioisotope labeled materials concerned with normal and abnormal physiology of the gastro-intestinal tract. As a result, routine clinical tests using radioisotope labeled compounds are now in use in the evaluation of gastro-intestinal function. Other research programs in progress are concerned with cardiovascular, pulmonary and renal function, both in normal and abnormal patients.

A training program in the physics, radiation protection, routine handling, and application of radioisotopes in medicine is a part of the Radiology Resident's Program.

Surgery

General Surgery. In the *second* year, the students attend lectures and demonstrations in surgical physical dagnosis which are integrated with the over-all course in Physical Diagnosis. They also have the opportunity to examine patients with surgical diseases under the supervision of a surgical instructor. In another phase of the second year surgical program, a four week course is given in "Defense Surgery" under the auspices of the MEND program. Various aspects of traumatic surgery and simple life saving procedures are taught to each individual student on experimental animals under conditions closely simulating those in human surgery. The course includes a one day visit to Fort Bragg for a demonstration of the management of mass casualties. A two week course in radiation biology given by the Department of Radiology is integrated with the surgical program. The *junior* students, during their surgical quarter, are assigned to the wards as clinical clerks in general and thoracic surgery, plastic surgery and neurosurgery. During one half of the quarter, they are assigned

to the wards at the V.A. Hospital. The students usually assist in the operative treatment of their patients. The surgical students in the *senior* year are assigned to all Surgical Clinics and, in addition, serve as clinical clerks working on the wards in Orthopaedics, Urology, Otolaryngology and Ophthalmology. In groups of two for the proportionate time available they are assigned in rotation to the operating room for Anesthesia and to the emergency division of the Out-Patient Clinic for experience in the diagnosis and care of urgent conditions.

Otolaryngologic Division. An introductory course of five hours' instruction in the use of otolaryngological instruments, with a review of normal anatomy, is given to second-year students. Senior students in the surgical quarter are assigned for two weeks to the service, during which time they devote their duties to out-patient, ward work —both public and private, operating room and are available for all ward rounds. Nine hours of didactic lectures are given in the surgical quarter. A hearing-speech clinic has been initiated. Evaluation of hearing is being done with specialized equipment in sound-treated-rooms. Time-consuming hearing tests, such as galvanic skin response, are done by special appointments.

Ophthalmologic Division. Second-year students as a part of the course in physical diagnosis are instructed in the use and application of the ophthalmoscope, perimeter, and other diagnostic instruments commonly used in Ophthalmology. Fourth-year students are assigned for one week (39 hours) to the ophthalmic division where opportunity is provided for instruction in ophthalmic disease, in the treatment of ophthalmic emergencies, and in recognition of ophthalmic signs useful in the over-all evaluation of the patient in relation to systematic disease. Fourth-year students attend weekly rounds in medical ophthalmoscopy and neurophthalmology during the surgical assignment. An elective is offered during the free period for students interested in ophthalmology.

Orthopaedic Division: During the surgical quarters the junior and senior students attend weekly rounds in orthopaedics and fractures. Students in their senior surgical quarter are assigned in rotation to the orthopaedic clinics. These students also attend all orthopaedic staff rounds, assist in orthopaedic operating rooms and attend the Journal Club meeting and all basic science lectures for the graduate students. An elective course in the treatment of fractures, limited to three students, is offered during the junior and senior surgical quarters. Also elective courses are offered in physical therapy and in cerebral palsy during these quarters. Arrangements may be made for the students who so desire to do research or experimental work. The students may also attend the state orthopaedic clinics.

Urologic Division. In the second year students are given a course of lectures and practical demonstrations in urologic physical diagnosis in the normal individual. Ward rounds on urologic patients are given every Saturday at 8:30 A.M. for third- and fourth-year students in their surgical quarter. Small groups are selected from the senior surgical group of students and assigned in rotation to the urologic department for concentrated study for a two-week period. They spend all of their time working with the house patients and out-patients in Urology Clinic. They attend all Urology Rounds, Staff Conferences and Journal Club Meetings. Rounds are given also every Thursday afternoon at 4:00 P.M. for the students in their surgical quarter. The students assigned to urology, work with the upper staff every morning and the upper and house staff in the urology clinic in the afternoon. There is the closest association and constant supervision of these students by both the upper and house staff.

Division of Plastic, Maxillofacial, and Oral Surgery: Didactic lectures and patient demonstrations are given to both the third and fourth-year students to familiarize them with the basic principles of wound healing and repair, plastic, reconstructive and reparative procedures. Beside ward rounds, demonstrations are held twice weekly to illustrate the phenomena of trauma, disease and reconstruction. Third-year students are assigned plastic surgery cases and patients and follow them from admission to the operating room and through convalescence until discharge from the hospital. Fourth-year students work in the plastic surgery clinic which meets each afternoon, Monday through Friday, with special reference to Wednesday which is the plastic surgery and oncology return or follow-up day. Opportunity is afforded interested students to observe moulage, cast work, cosmetic restoration of color and the making of prosthetic appliances, etc. The Oral Surgery Clinic has three dentists and oral surgeons in attendance and is in operation five and one-half days each week. Associated closely and allied with the Division of Plastic Surgery is the medical speech pathologist and audiologist and the orthodontist.

The Division of Medical Speech Pathology will work in close cooperation with the division of plastic and oral Surgery, the division of otolaryngology, and the departments of pediatrics and psychiatry. Weekly lectures are given to familiarize students with the various types of speech defects and abnormalities which are encountered in both children and adults. The pre- and postoperative followup cleft palate patients are seen and evaluated each Wednesday afternoon in conjunction with the plastic surgical clinic. Clinics will be arranged as desired with other departments. Speech instruction and therapy are given daily by appointment.

Neurosurgical Division. During all four quarters, separate weekly ward rounds are held for the junior and senior surgical groups. Emphasis in these rounds is placed upon the recognition of neurosurgical problems, followed by observation of the operative and post-operative procedures. Weekly x-ray and pathological conferences are held, and these may be attended by interested individuals. Tumor clinic conferences are held bi-monthly, on each second and third Thursday of the month.

Anesthesiology Division. Second year students are instructed in the fundamentals of anesthesia during operative procedures on animals. They also are given a practical demonstration of anesthetic drugs and techniques during the course in pharmacology. Third year students are given a series of lectures stressing cardiac arrest and resuscitation, oxygen therapy techniques and treatment of the patient in shock. Senior year students are given a ten day concentrated course of training in the practical administration of anesthetics, during which time they observe and administer anesthetics under the supervision of staff anesthesiologists.

Undergraduate Cancer Training Program

(Supported by a grant-in-aid from the USPHS)

Coordinator: Wiley D. Forbus, M.D.

In the clinical years, the instruction of the student in the care of cancer patients is centered around the patient. During the third-year the student is assigned to the wards where he participates in all phases of the care of patients with cancer or other diseases (diagnosis, pre- and post-operative care, and assisting in the operation). He observes the lesion in situ, examines it in the fresh state, follows the specimen through the pathologic laboratory, and studies the prepared slides for microscopic appearance, thereby learning the pathology and checking on the accuracy of his own diagnosis.

The student thus participates in the diagnostic studies on the patient, makes his own diagnosis, observes the reaction of the patient and his family to his condition, follows the therapeutic procedures and the results obtained, correlates these with the underlying pathology, assists with the postoperative care, and in the discharge instructions. During this period there is more formal instruction in surgical pathology carried on jointly by a pathologist and a surgeon.

This training program is supplemented by a tumor registry where accurate follow up records are kept with the results summarized and made available to staff and students. Thus they can know the year by year results of treatment of large numbers of patients as expressed in percentages of those (1) free of recurrence, (2) apparently cured, (3) having a recurrence, or (4) dead of recurrence at varying times after onset of the disease and the institution of therapy.

Duke Hospital

Internships and Residencies

Straight internships of one year duration are available in Medicine, Surgery, Obstetrics-Gynecology, Pediatrics, Psychiatry and Pathology. Mixed internships are available in Obstetrics and Pediatrics. A stipend of $25 per month is offered in Medicine, Surgery and Pediatrics plus room, board, laundry and uniforms. An allowance of $12.50 is paid to married house officers in lieu of a room in the house staff quarters. Appointments are from July 1 through June 30, although special arrangements can be made with individual department heads.

Assistant Residencies and Residencies are available in the following services.

Anesthesiology	C. Ronald Stephen, M.D.
Internal Medicine	(Chm.) E. A. Stead, Jr., M.D.
Allergy	Oscar C. E. Hansen-Prüss, M.D.
Cardiology	E. S. Orgain, M.D.
Dermatology	J. Lamar Callaway, M.D.
Endocrinology	Frank L. Engel, M.D.
Gastroenterology	Julian M. Ruffin, M.D.
Hematology	R. Wayne Rundles, M.D.
Neurology	E. Charles Kunkle, M.D.
Pulmonary Disease	E. E. Menefee, Jr., M.D.
Obstetrics & Gynecology	(Chm.) Bayard Carter, M.D.
Pathology	(Chm.) Wiley D. Forbus, M.D.
Pediatrics	(Chm.) Jerome S. Harris, M.D.
Allergy	Susan C. Dees, M.D.
Cardiology	Madison Spach, M.D.
Endocrinology	Robert S. Stempfel, M.D.
Hematology	Doris Ahlee Howell, M.D.
Psychiatry	(Chm.) E. W. Busse, M.D.
Radiology	(Chm.) Robert J. Reeves, M.D.
Surgery-General	(Chm.) Deryl Hart, M.D.
Neurosurgery	Barnes Woodhall, M.D.
Ophthalmology	W. Banks Anderson, M.D.
Oral Surgery	Nicholas G. Georgiade, M.D.
Orthopaedics	Lenox D. Baker,M.D.
Otolaryngology	Watt W. Eagle, M.D.
Plastic Surgery	Kenneth L. Pickrell, M.D.
Thoracic Surgery	Will C. Sealy, M.D.
Urology	Edwin P. Alyea, M.D.
Dentistry	Norman F. Ross, D.D.S.

All Services are approved by the Council on Medical Education and Hospitals of the American Medical Association.

Application forms for all internships may be obtained by writing to the Superintendent of Duke Hospital or to the above chairmen of departments, Duke University Medical Center, Durham, North Caro-

lina. Graduates of any Class A medical school are eligible for internships. Appointments are open to women and to graduates of accredited foreign medical schools. Duke Hospital participates in the National Intern Matching Program, Inc.

After completion of an internship in Duke Hospital or in another acceptable hospital, a certain number may be appointed as assistant residents in the above listed specialties plus Biochemistry, the Student Health Service or as fellows of the Private Diagnostic Clinics at a salary of $250 to $800 per year plus maintenance. A smaller number may be eventually promoted to residencies in the above listed services at an annual salary of $500 to $1,300 per year plus maintenance. Application should be made to the head of the department concerned.

The Hospital and School of Medicine are an integral part of the Duke University campus, and its educational, recreational and athletic facilities are available for the Resident Staff.

The Durham Veteran's Hospital is located within walking distance of Duke Hospital, and is integrated with the Duke Hospital house staff training program. House officers on certain services may be assigned to either hospital for parts of a year. Administratively, the hospitals are separate but educationally they are closely integrated. The Medical Staff of the Veteran's Hospital is supervised by a Dean's Committee composed of faculty members of the Duke School of Medicine. Certification of training is provided by Duke Hospital.

Postgraduate Study

William M. Nicholson M.D., Professor of Medicine and Assistant Dean in Charge *of Postgraduate Education.*

Graduates in medicine are welcomed at the various specialty clinics in medicine, surgery, obstetrics and other specialties, which are held from 9:30 A.M to 12:30 P.M. each morning except Sunday. Ward-rounds are given in medicine in the mornings, as general out-patient clinics are in session in the afternoons. On each Saturday morning, there are offered three hours of formal teaching which has been approved for Category I credit with the Academy of General Practice. From 10:00 to 11:00 a formal clinic or lecture is given by one of the various departments of the Medical School. This is followed by a clinicopathologic conference from 11:00 to 12:00. These are all held in the Medical Amphitheater. Those who desire weekly programs of these exercises can obtain them by writing the Director of Postgraduate Education, Duke University Medical Center, Durham, N. C. In addition to these exercises, there are throughout the year concentrated formal types of postgraduate instruction in the way of symposia and study groups. Announcements about them will be made from time to time.

Paramedical Courses at Duke Hospital

Dietetics

The Dietetic Internship which begins on September 1 is approved by The American Dietetic Association. Fourteen interns may be admitted. Candidates for admission must have a Bachelor's Degree from an accredited college or university with a major in foods and nutrition or institutional management. The courses required and those recommended for entrance are outlined by *The American Dietetic Association.* The Internship offers experience in the following areas: teaching, food service administration, therapeutics, pediatrics, nutrition clinic and public health. After successful completion of the year's internship a certificate is granted by the Committee on Health Affairs of the Duke University Medical Center, and recommendation is given for membership in The American Dietetic Association.

More information may be obtained by writing to the Director of Dietetics, Duke University Medical Center, Durham, North Carolina.

Hospital Administration

Eight internships in hospital administration leading to a certificate are available to university graduates whose character, tact, and ability for leadership are good, and whose academic standing is high. These internships are of two years' duration and pay a small salary in addition to room, board, and laundry. Vacations of two weeks are allowed during each year of internship.

The instruction is practical rather than theoretical in emphasis. The interns are rotated through seven different assistant administrative positions in the Hospital. There is also a weekly seminar lasting two hours and two classes lasting one hour each during the week.

The interns may register in the Graduate School of Duke University, and receive the A.M. degree after the successful completion of a thesis and twenty-four semester hours of university courses in various fields. This additional work will add one year to the program. Further information may be obtained by writing to the Superintendent, Duke Hospital, Durham, N. C.

Medical Art and Illustration

The function of this Division is to produce visual aids by way of various art and photographic methods for staff members allied to medicine. These visual aids are used to enchance the medical records and to aid in research and education. Services offered by this Division are: 1. Medical Art: Illustrations, by means of various artistic techniques, depicting anything perceptible to the eye, the existing but unseen and even the theoretic, as well as mechanical drawings, diagram, charts, graphs, lettering, casts, models, exhibits, etc. 2. Medical Photography: Illustrations of anything to which available photographic equipment will respond. This division produces still and motion pictures, microphotographs, pictures of the retinae, photographic copies, film strips, lantern slides, enlargements and contact prints. Services offered directly for the patient's benefit are: Production of various types of anatomical prostheses and instruction in the use of opaque cosmetics. Facilities for individual training in specific techniques or methods employed by this division are available. No academic credit is given. Prerequisites, tuition, time and type of training are determined by the Chairman of this division. No regular courses of instruction in medical art and photography or their allied fields are offered.

Medical Technology

The course in laboratory technique, which includes training in blood chemistry, clinical microscopy, bacteriology, serology, basal metabolism, etc., is approved by the Board of Schools of Medical Technology of the American Society of Clinical Pathologists. The course lasts twelve months, the next classes begin February and September 1959. The registration fee is $75.00 which includes tuition, student health and diploma fee for the entire course. There are no additional fees except for breakage. Other student activity fees are optional. The students live in town at their own expense. A minimum of two years of approved college work is required. Upon successful completion of the course the student is qualified to take the examination for certification as a Registered Medical Technologist. Information as to the specific requirements may be obtained from Dr. Wirt W. Smith, Duke University Medical Center, Durham, North Carolina.

Nurse Anesthesia

Courses available to graduate nurses include an eighteen months' course for nurses who have had no experience in anesthesia, and a twelve months' course for nurses who have had five years of practical experience but no formal training in the specialty. Instruction em-

braces the theoretic aspect and clinical application of all drugs and techniques in accepted usage. The program is divided into quarters. The major part of the basic theoretic instruction is given during the first three quarters. After a preclinical period of eight weeks, clinical practice runs parallel with the theoretic program. One class is accepted annually and enrolled on January 15. All appointments of the current year are made by September 1 of the preceding year. Graduates of these courses are eligible to take the examination given by the American Association of Nurse Anesthetists. Tuition is $150.00. Additional information concerning these programs for nurses may be obtained from Mary B. Campbell, R.N., Box 3204, Duke University Medical Center, Durham, North Carolina.

Nursing

Practical Nursing Division of the Vocational Education Department of the Durham City Schools, Duke Unit. After four months of classroom instruction at the Hillside High School eight months are spent in classes and practical training at Duke Hospital. At the completion of this course the student receives a certificate in practical nursing and is eligible for licensure as a practical nurse in North Carolina.

Physical Therapy

A course in physical therapy, approved by the Council on Medical Education and Hospitals of the American Medical Association, is offered at Duke University under the joint auspices of the Graduate School of Arts and Sciences and the Medical Center. The program is conducted at the post-baccalaureate level, and has two phases: (1) The fundamental courses in physical therapy are studied in the first fifteen months. The Certificate in Physical Therapy is awarded upon completion of this work. The graduate is then eligible to become a member of the American Physical Therapy Association, to take state and national licensing and registration examinations, and to work as a qualified physical therapist. During this time fifteen hours of graduate credit, which meet one-half of the graduate residence requirement, may be accumulated. (2) Later specialization in anatomy or physiology can provide the additional fifteen hours of graduate credit necessary for the Master of Arts degree, subject to Graduate School regulations. This second phase, including preparation of a thesis, may be formally scheduled in one semester.

The physical therapy course is open to men and women. Admission may be granted to a student who has received an A.B. or B.S.

degree from an accredited institution. The undergraduate record should be well rounded and of such quality as to give positive evidence of capacity for success in graduate study. Included must be one year of laboratory courses in biologic sciences, chemistry, and physics; mathematics through trigonometry, and basic courses in psychology.

In special cases admission will be granted to students who have had a minimum of three years (90 semester hours) of acceptable college study including the above science requirements, and whose college will grant a baccalaureate degree upon satisfactory completion of the physical therapy program. If approved prior to registration twenty hours of undergraduate credit may be earned and applied toward a Bachelor of Arts degree. Such students will be awarded a Certificate in Physical Therapy upon completion of the fifteen months' curriculum.

The curriculum for the first fifteen months includes courses in anatomy, physiology, kinesiology, histology, pathology, psychiatry, psychology, ethics, administration, rehabilitation, and the various physical therapy procedures. Three months of clinical experience are provided on a rotation basis at Duke University Medical Center and at affiliated hospitals. Tuition and health fees for the first fifteen months are $685.00 for the certificate program without graduate credit, or $985.00 for the graduate program. The course begins in mid-September and ends in December of the following year.

For further information write to the Director of Physical Therapy, Box 3247, Duke University Medical Center, Durham, North Carolina.

Prosthetic and Orthopaedic Appliances

The function of this department is to produce prosthesis and orthopaedic appliances for the medical profession. Facilities for individual training in specific techniques or methods employed by this department are available. Those who complete four years' training are eligible to take the examination of American Board of Certification.

X-Ray Technology

The School of X-Ray Technology offers a two year training program of instruction and practical training in all divisions of the Department of Radiology.

Students are admitted the first Wednesday in September for 2 years of intensive training in the academic and practical aspects of radiographic, therapeutic and radioisotope technique.

During the second year the students are paid a stipend of $100 per month. Upon completion of the course, the student is eligible to take the National Board Examinations in X-Ray Technology, sponsored by the American Registry of X-Ray Technicians. The school is approved by the Council on Medical Education of the American Medical Association, the American Society of X-Ray Technicians and the American Registry of X-Ray Technicians.

Candidates for admission must be graduates of approved high schools and rank in the upper third of their class. Official transcript of high school and/or college grades, a list of three references and a recent photograph must be included with the application before being considered by the Committee on Admissions. It is recommended that applicants be 20 years, or not more than 30 years of age at the time of enrollment.

A registration fee of $25 is required upon entrance and is payable to the Treasurer, Duke University, on the day of entrance. Books, supplies and uniforms are about $100. White uniforms and white shoes are required. Laundry of uniforms is furnished by the Medical Center. No living quarters are provided for paramedical students by the University and the students in X-Ray Technology live in town at their own expense. For further information or application blank, write John B. Cahoon, R.T., Technical Director, School of X-Ray Technology, Duke University Medical Center, Durham, North Carolina.

THE SCHOOL OF NURSING

Fall Semester begins September 22, 1960

Spring Semester begins February 2, 1961

General Information

The School of Nursing offers a four-year baccalaureate program. The students who fulfill the requirements of this program earn the Bachelor of Science Degree and are eligible to take the licensing State Board Examinations given by the N. C. Board of Nurse Registration and Nursing Education for the title of Registered Nurse.

The School of Nursing functions within the philosophy of Duke University. This philosophy is epitomized by its moto, *Erudito et Religio,* which "reflects a fundamental faith in the union of knowledge and religion, the advancement of learning, the defense of scholarship, the love of freedom and truth, a spirit of tolerance, and a rendering of the greatest service to the individual, the state, the nation and the church. Through changing generations of students, the objective has been to encourage each individual to achieve to the extent of his capacities an understanding and appreciation of the world in which he lives, his relationship to it, his opportunities, and his responsibilites."

The faculty of the School of Nursing ascribes to the concept that a professional nurse is a person who has acquired the specialized knowledge of Nursing, who has attained abilities useful in practice of Nursing, and who has developed attitudes appropriate to the profession of Nursing.

The faculty of the School of Nursing endeavors to promote a continuous change in the behavior of the students through experiences planned for the acquisition of specific knowledges which include: knowledge of scientific principles basic to Nursing, and knowledge of the tools, techniques, and resources useful in the practice of Nursing, and knowledge of characteristics of the Health and Welfare Institutions.

The faculty of the School of Nursing endeavors to promote a continuous change in the behavior of the students through experiences planned for the attainment of skills which include: the ability to make decisions independently or as group participants, the ability to relate separate phases of patient care to a total plan of patient care, the ability to observe specifics, and to interpret observations for self and others; the ability to work harmoniously and positively with people in ramified and complex situations and organizations.

The faculty of the School of Nursing endeavors to promote a continuous change in the behavior of students through experiences

planned for the development of desirable attitudes which include: a concern for personal enrichment, an appreciation of and respect for individuality, an awareness of their role as citizens, for contributing to their own development and to that of their community and profession.

The School of Nursing offers to carefully selected persons a program based on experiences which are designed in sequential patterns to promote a concatenation of learning and growth. Classes are kept small and close contact with the instructor is encouraged. Whether in the classroom, hospital, laboratories, community, or in the extracurricular activities, the development of the student's physical, mental and social well-being is the primary consideration of the faculty.

Graduates of the program are prepared as professional nurses for beginning positions in nursing and have the competencies and theoretical preparation on which to build further knowledge.

History

The School of Nursing of Duke University was established in association with the School of Medicine and Duke Hospital. The first class of students was admitted in January 1931. In 1953, the School of Nursing was incorporated into the Division of Health Affairs in the University structure. When established, the three year curriculum leading to the Diploma in Nursing was planned to prepare young women to meet community nursing needs; students who completed two years of acceptable college work were awarded a Bachelor of Science degree in Nursing in addition to the Diploma in Nursing. Trends in nursing created a demand for a four year program leading to the degree of Bachelor of Science in Nursing, and in 1953, the University Board of Trustees approved such a program. The Master of Science in Nursing degree was authorized in 1956.

Graduates of Duke University School of Nursing have served their communities in North Carolina and in other states; they have participated in their professional organizations on a national, state and local level. During World War II graduates of this school staffed the 65th General Hospital, the Duke University Medical Unit.

Facilities

The facilities for instruction include the facilities available in the undergraduate, professional, and graduate schools and colleges of Duke University and the clinical facilities of Duke Hospital, the North

Carolina Cerebral Palsy Hospital and the Durham Health Department.

In a wing of Hanes House are located the administrative offices of the School of Nursing, a large classroom seating 100 persons and equipped with audio-visual aids; a small classroom seating 50 persons and equipped with a screen and movie projector, a nursing arts laboratory with equipment for nursing practice for sixteen students, a conference room for faculty committees, small discussion groups and student council meetings. The School of Nursing also uses the laboratories of the Medical School for courses in science and classrooms in the hospital for clinical nursing courses.

A reference library of 3,900 books and periodicals of special interest to students majoring in nursing is located in Hanes House. Students may use the general libraries on the East and West Campuses and the Duke Hospital Library. A collection of visual aids including films is indexed in the library for the use of students and instructors in the School of Nursing.

Duke Hospital has every modern convenience for the diagnosis, proper nursing care, welfare and comfort of the patients including 640 hospital beds, 30 bassinets, a large public out-patient department, a large private diagnostic clinic with offices and examining rooms for the doctors who serve on the staff of the hospital. There are very close relationships established between the hospital, the Health Departments and other agencies in North Carolina.

The beds in Duke Hospital are assigned to the various services as follows: Medicine, including dermatology and neurology, has 172; surgery, including urology, otolaryngology, ophthalmology, and orthopaedics, 278; obstetrics and gynecology, 64; and 30 bassinets; psychiatry, 55; and pediatrics, 71. There are 300 beds in private and semi-private rooms included in the figures above: 18 air-conditioned operating rooms, 2 obstetrics delivery rooms. Except for emergencies, all patients are admitted to the hospital from either the out-patient clinic or the private diagnostic clinic. Approximately one-half of the 19,700 patients discharged in the past year were staff patients and the other half private patients.

The hospital has been approved for internships and residencies by the Council on Medical Education and Hospitals of the American Medical Association and is approved by the Joint Commission on Accreditation of Hospitals.

The out-patient department has an average of 435 visits per day. All services including psychiatry carry on an active program in the out-patient departments. Students are assigned to the out-patient department during their program in the School of Nursing.

The Summer Session

The programs in the School of Nursing include courses in the Summer Session each year. Students in the School of Nursing have their courses approved in the School of Nursing and pre-register with the Summer Session office. Students from other colleges and universities who are admitted to the School of Nursing with advanced standing are expected to enroll in the Summer Session to make up deficiencies. Arrangements for registration are made through the office of the Dean of the School of Nursing.

The Summer Session of 1960 will include two terms: Term I, June 10 to July 15, Term II, July 16 to August 20. By attending both terms it is possible for a student to earn as many as twelve semester hours of credit.

While the basic purpose of the Summer Session is to serve the academic and the professional requirements of those who are interested in their own educational advancement, the University recognizes the need of, and provides for, a varied recreation program both athletic and social.

University fees are charged at the rate of $21.50 per semester hour for those admitted with advanced standing. Board at Duke Hospital is $10.00 per week per person, room is $31.50 per person for six weeks term and laundry is approximately $0.50 per week. A bill is sent to all pre-registered students to permit payment in advance.

Awards

THE FLORENCE NIGHTINGALE PLAQUE: The Florence Nightingale plaque is awarded to a graduating student by the Alumnae Association for leadership, scholarship and nursing skill.

THE MOSELEY AWARD: The Moseley Award of $25.00 is given to the student in the senior class who has shown the most skill in Nursing Arts throughout her program in the School of Nursing.

Student Government Association

The purpose of this organization is to regulate all matters pertaining to the life of women of Duke University School of Nursing not under the jurisdiction of the faculty; to increase a sense of individual responsibility; and to cooperate with the faculty in creating and maintaining high ideals for the nurses of the University.

THE HONOR SYSTEM: The purpose of the Honor System is to secure the cooperation of the student body in maintaining honorable

conduct in all relations of student, professional and social life. It applies to every student in the School of Nursing. The Honor System is a vital directive force in all phases of each student's life and is a major working part of the Student Government Association.

Santa Filomena

Santa Filomena, the Senior Honorary of the Duke University School of Nursing, was organized in April, 1944, under the sponsorship of the 1943 class. The purpose of this organization is to recognize achievement and promote leadership.

The members are chosen from the rising Senior Class and are publicly tapped by the old members at the first meeting of the SGA in their senior year, the number chosen not exceeding nine or being less than five. Each candidate must show recognized qualities of leadership or must have made some contribution toward the betterment of the School of Nursing. She must have demonstrated superior nursing abilities and her scholastic record must be C or above throughout her first two years.

Santa Filomena strives for better interclass relations, and to promote better nursing and higher nursing standards. The specific objectives are chosen by the members each year. All proceedings of the meetings of this organization are held in secrecy as are all ceremonies except the public tapping of the new members. The Santa Filomena's flower is the white lily and the members wear a small gold Florence Nightingale lamp.

Alumnae Association

The objectives of this Association shall be to cultivate fellowship among its members, to promote the interests of the School of Nursing, and to take its place in the general scheme of Alumni bodies of the University.

The members of the Association strive for the advancement of professional nursing and for the attainment of the aims of the professional organizations.

Admission

CANDIDATES may qualify for admission as members of the freshman class or as students with advanced standing. Since the enrollment is limited, the Committee on Admissions selects students who, in its judgment, are best qualified to benefit from the educational advantages which the school offers. The Committee bases its decision on the academic record of the candidate, on test scores, and on satisfactory evidence of good character and general fitness for college life at Duke. A visit to the campus for a personal interview with members of the faculty is of material benefit to the candidate and the Committee. A non-refundable processing fee of $10.00 must accompany the official application form.

ADMISSION TO THE FRESHMAN CLASS: A candidate for admission to the freshman class must present at least fifteen acceptable units of secondary school credit. A minimum of twelve units in college preparatory subjects must be presented, but it is recommended that fifteen be offered. Subjects classified as college preparatory are English, foreign languages, history and social studies, mathematics (Algebra and Geometry), and sciences.

It is recommended that all candidates for admission to the freshman class take, not later than January of the senior year in high school, the Scholastic Aptitude Test of the College Entrance Examination Board or a similar program of tests administered on the Duke Campus by the Duke University Bureau of Testing and Guidance. Details of the procedure to be followed in applying for either of these testing programs will be sent to each candidate for admission.

Specific Requirements

I. All applicants for admission to the School of Nursing must present at least fifteen acceptable units of secondary school credit. A unit of credit is allowed for a course of study pursued throughout an academic year at an accredited secondary school, if the course has been completed satisfactorily.

1. Twelve units must be in English, foreign language, history and social studies, mathematics, and natural science; and must include:

(a) English—3 units.
(b) Algebra—1 unit.
(c) Plane geometry—1 unit.

2. The three remaining units are elective and may be selected from those subjects for which the school allows credit toward graduation; but it is recommended that they also be selected from the five subject fields listed above.

Other units offered in subjects not included in this list will be considered for acceptance on the basis of full statements transmitted with the applicant's record from the school recommending her.

II. Satisfactory scores on a battery of aptitude tests, either the Scholastic Aptitude Test or the program of tests administered by Duke University.

III. Three recommendations, two of which must come from recent high school or college instructors.

IV. Interviews with two members of the Duke University School of Nursing faculty, whenever possible.

V. Evidence of good health will be requested after the applicant is considered for acceptance. Final acceptance will be contingent on a complete physical examination given at Duke Hospital during the Orientation Period. This examination also includes a chest x-ray, blood and urine studies and skin tests.

ADMISSION TO ADVANCED STANDING IN THE SCHOOL OF NURSING: An applicant for advanced standing must have fulfilled the equivalent of the requirements for admission to the freshman class, must present official certificates of all work completed in other institutions, and must have an honorable dismissal from each institution previously attended. Advanced standing candidates who have previously taken the Scholastic Aptitude Test of the College Entrance Examination Board should request the Board to send a report of their test scores to the Director of Admissions. All others may be advised to take the Scholastic Aptitude Test or the program of tests administered by the Duke University Bureau of Testing and Guidance, as recommended for freshman candidates. Credit for work completed will be determined in relation to the curriculum requirements of the School of Nursing.

Graduate nurses applying for admission to advanced standing are advised to submit records of previous performance in Nursing, as well as results of the NLN Graduate Nurse Qualifying Examination.

Applicants for advanced standing in the School of Nursing should present, as far as possible, subjects corresponding to those required by the School. They may not, during their first semester, register for more than the minimum number of hours required of the class which they enter, except by permission of the Dean of the School of Nursing.

Transfer credits are tentatively evaluated pending the completion of two semesters of work in residence. To validate the total provisional transfer credits the student must earn at least an average of C in a normal load of work. Transfer grades of C or above are rated at two quality points per semester hour when validated. Courses in which grades of less than C have been earned are not acceptable for transfer credit.

The maximum amount of credit acceptable from a junior college is 60 semester hours, exclusive of physical education. No credit is given for work completed by correspondence, and credit for no more than six semester hours is allowed for extension courses. Any extension work accepted must be approved through the dean.

SPECIAL STUDENTS: Graduate Nurses may be admitted for special work in such courses of instruction as they are qualified to take. They may not be admitted as candidates for a degree in a regular course unless they meet all normal requirements for admission.

ADMISSION PROCEDURE: Application for admission should be made to the School of Nursing, Duke University, Durham, North Carolina. Application forms and instructions will be sent to the candidate. It is the responsibility of the candidate to see that these forms are properly executed and, together with other requested material, sent promptly to the Office of Admissions of the School of Nursing.

Application prior to the final year of the secondary school course is not required. Formal steps looking toward admission should be initiated, however, early in the senior year and not later than February 1. Candidates for admission to the School of Nursing normally will receive notification of the decision of the Committee on Admissions by May 1.

READMISSION OF FORMER STUDENTS: A student who, following withdrawal from college, desires to return should apply to the Committee on Admissions. When applying for readmission the student should make a detailed statement of her activities since leaving Duke University.

Financial Information and Living Accommodations

FEES PAID by students cover only a part of the cost of their instruction and of the operation of the University. Income from endowment and contributions from the alumni, alumnae, and other public spirited men and women meet the balance, which constitutes more than half the total cost.

Estimated Expenses

	1st year (2 sems.)	*(1st summer session)*	*2nd year (12 mths.)*	*3rd year (12 mths.)*	*4th year (2 sems.)*
Tuition	$ 850.00		$ 850.00	$ 850.00	$ 850.00
General Fee	150.00		150.00	150.00	150.00
Room Rent	235.00	39.00	325.00	325.00	235.00
Board	450.00	60.00	540.00	540.00	450.00
Laundry (approx.)	20.00	3.00	25.00	25.00	20.00
Books (approx.)	40.00	10.00	40.00	40.00	10.00
Activities (Student Government)	15.00		15.00	15.00	15.00
Uniforms		90.00	10.00		10.00
Travel (approx.)	60.00				15.00
Room Key Deposit	1.00				
	$1,821.00	$202.00	$1,955.00	$1,945.00	$1,755.00

Tuition and Fees

The tuition of $425.00 and the general fee of $75.00 are due and payable not later than the day of registration for a particular semester. After the day of registration no refund of the tuition or the general fee will be made except for involuntary withdrawal to enter the armed services.

Beginning the third year, qualified students may secure additional supervised training by performing services during hospital assignments in patient care. Such students receive awards as scholarships which will be credited to tuition, general fees, room and board.

New students, on notification of acceptance, are required to pay a non-refundable matriculation fee of $20.00 and to make a deposit of $50.00. The $50.00 deposit will not be refunded to accepted applicants

who fail to matriculate. For those who do matriculate, $25.00 of the deposit serves as a continuing room deposit for successive semesters, and the remaining $25.00 as a continuing registration deposit. Arrangements for refund for $25.00 room deposit are described in information furnished each resident student by the Housing Bureau. The $25.00 registration deposit will be refunded to students (1) whom the University does not permit to return, (2) who graduate, or (3) who request the refund at the time of pre-registration, thus indicating their intention not to return for the following semester. The registration deposit will not be refunded to students who pre-register and fail to enter the following semester on schedule.

Students who have been re-admitted to the University after an absence of one or more semesters, on notification of re-admission, are required to make the $50.00 room rent and registration deposit.

Undergraduate students are required to live in the School of Nursing residence houses unless they are married or are living with parents or relatives. Any exception must be approved by the Dean. Rooms are rented for a period of not less than one semester. No refund of room rent will be made to a student who withdraws from the residence halls.

The dining facilities available to students in the School of Nursing include the Medical Center Hospital Cafeteria for upper class students; the Men's Graduate Center and the East Campus Union for freshmen students. Resident students may not board at other than the places specified. The charge for board is payable in equal payments not later than the date of the beginning of each semester and for freshmen, also at the beginning of summer session.

In the regular academic year, students who register for no more than two courses with a maximum credit of 8 semester hours are classified as special students. They are charged a registration fee of $5.00 for each course and $28.50 for each semester hour of course credit. Registration for 9 or more hours or 3 or more courses, requires payment of full fees.

Auditing of one or more courses without charge is allowed students paying full fees, provided that the consent of the instructor is obtained. Students who are enrolled for not less than 3 nor more than 8 semester hours may audit other courses by payment of $10.00 for each course audited. Auditors submit no daily work, take no examinations, and receive no credit for courses audited.

One transcript is issued free of charge. Additional copies are supplied at $1.00 each.

No records are released and no student is considered by the faculty as a candidate for graduation until she has settled with the Treasurer for all indebtedness.

Bills may be sent to parents or guardians provided the Treasurer has been requested in writing to do so. Failure to pay bills on or before the due dates will debar the student from class attendance until the account is settled in full.

Living Accommodations for Students in the School of Nursing

Hanes House and Hanes House Annex are residence houses for School of Nursing students. Freshmen students are assigned to Hanes House Annex. A counselor and her assistants who are members of the Dean's staff live in the respective houses. The counselors, with the cooperation of the Student Council, are responsible for the administration of the houses.

Undergraduate students are required to live in the residence houses unless they are married or are living with parents or relatives. Any exception must be approved by the Dean. Rooms are rented for a period of not less than one semester. No refund of room rent will be made except for involuntary withdrawal to enter the armed services. Such refunds will be made in accordance with the University's established schedule.

The rental charge for a single room is $285.00 for an academic year or $142.50 per semester or $395.00 per twelve-month period. The rental charge for a double room is $470.00 for an academic year or $117.50 per person per semester, or $650.00 per twelve-month period or $162.50 per person per semester. The rental charge for a single room for a six-week summer session term is $48.00; the rental charge for a double room for a six-week summer session term is $78.00 or $39.00 per person.

Regulations governing the occupancy of rooms will be supplied by the Housing Bureau to those students making application for housing. Occupants are expected to abide by these regulations.

Room reservations are made with the Housing Bureau. An applicant who has been officially accepted as a resident student is assigned a room according to an established plan. The initial $25.00 room deposit is effective for the entire college course of the student whose attendance during regular terms is continuous. The deposit will be refunded to resident students under the following conditions: (a) Within thirty (30) days after the student has been graduated, (b) upon student's withdrawal from the University residence halls provided a written notice is received in the Housing Bureau by August 1 for cancellation of reservation for the fall semester and not later than January 15 for cancellation of reservation for the spring

semester, (c) when the reasons requiring withdrawal are beyond the student's control. No refund is made until the occupant has checked out of her room through the Housing Bureau and has settled all her accounts with the Treasurer.

Freshman students are assigned to Hanes House Annex. The Housing Bureau with the assistance of the Orientation Committee selects a roommate for a new student who is assigned to a double room but has made no arrangement for a roommate. After a student has been in residence for one semester, she is responsible for obtaining and keeping a roommate if she continues to occupy a double room. If a student occupying a double room does not obtain a roommate within a period of two weeks she may be required to pay the rental consideration for the whole room.

After a student has engaged a room she is not permitted to move to another without the consent of the Housing Bureau. A student leaving one room and occupying another without permission may be charged for both rooms for the entire semester. No student is allowed to rent or sublet her room to another occupant.

Residence house rooms are reserved by upper-class students in accordance with the plan that is published during the school year. All rooms that have not been reserved on or before the announced date will be considered vacant for the succeeding semester and will be assigned to others.

The rooms are equipped with only the principal articles of furniture. Each student provides her own linens, blankets, bedspreads, and curtains. She may supply additional articles, but large rugs and additional furniture which make cleaning difficult are prohibited.

Scholarships and Loans

SCHOLARSHIPS: Scholarships intended to aid needy and deserving students are awarded annually to students who evidence qualities which give high promise of excellence in Nursing. Detailed information on scholarships will be sent on request.

LOANS: A number of loan funds have been established for the benefit of the students of Duke University. In addition to local loan funds, Duke University participates in the student loan program established under the provisions of the National Defense Education Act of 1958. The attractive terms offered to students under the National Defense Education Act offer a practical solution to students who need to defray college costs. The Student Loan Committee, in approving loans, selects those students who, from the standpoint of character, scholastic attainment, personality and degree of financial need, are deserving of consideration.

General Regulations

Orientation Program

ALL FRESHMEN and transfer students are required to participate in the activities of Orientation Week. The program includes general ability, achievement, and placement tests, orientation lectures, physical examinations, social events, special religious services, registration, and enrollment. New students who miss the whole or a part of the Orientation Program place themselves at a serious disadvantage at the very outset of their college career.

Registration

Students who register in either semester at a date later than that prescribed must pay to the Treasurer a fee of $5.00. They are counted as absent in the work they have missed in the courses to which they are admitted, and these absences carry the same penalty as do other absences from the course. Changes in courses for reasons not arising within the University require a payment of $1.00 for each change made. No course may be elected later than one week after the opening of the semester, and no student may be admitted to any class without an official enrollment.

Health Regulations

Before admission to the School of Nursing, a student is required to have a physical examination by the family physician and to be immunized against typhoid fever, diphtheria, tetanus, smallpox and poliomyelitis. Physical defects, such as defective vision, dental needs, etc., must be corrected before admission.

Before final acceptance, each student is required to pass a physical examination given during Orientation Week. Students whose condition needs further observation may be admitted tentatively, but must cancel their application if later findings prove them physically unfit for nursing.

Medical Care

Students enrolled in a regular program of studies are eligible for the services offered under the health program of the school.

Complete medical facilities are available to students at the Duke Medical Center under the health program. With the necessary exceptions noted below, this type of care is furnished at a minimum expense to regularly enrolled students. The cost is included in the general fee paid each semester.

1. Physical Examination: Upon admission each student receives a complete physical examination including a chest x-ray. Thereafter, the physical examination is repeated annually; the check x-ray semi-annually.

2. Health Office: The health office in Hanes House, under the direction of a physician is maintained for the students in the school. Advice, treatment and examination are available to students during regular hours. Consultation with Duke Medical Center staff specialists are arranged through the health office if necessary. Drugs, dressings, laboratory tests and x-rays are arranged for as needed.

3. Hospitalization: A student requiring hospitalization is admitted to Duke Hospital. Admission is arranged through the health office. Hospital care includes staff nursing, drugs, dressings, laboratory tests and x-rays as needed. Hospital care is limited to thirty days.

If the student is covered by insurance providing hospital, medical or surgical benefits, the coverage shall be applied to the cost of her care.

4. Exceptions: The health program does not cover private duty nursing, refraction of eyes, treatment of teeth, all chronic or pre-existing conditions such diseased tonsils, hernias, pilonidal cysts, chronic skin conditions, endocrine disturbances; elective surgrey, braces or any orthopaedic appliances; accidents or illness occurring during vacations or while off the campus. Blood used for transfusions must be paid for or replaced.

5. Psychiatric Consultation: Advisory consultation with a psychiatrist can be arranged through the Dean of the School of Nursing at no expense to the student. Further psychotherapeutic interviews are not included in the program.

6. Student Health Insurance: This may be secured through the University at a minimal rate. The insurance excludes any coverage for accident or illness cared for under the health program while furnishing insurance protection off the campus and during vacations.

Grading

Grades are reported to indicate the following:

(1) Passed. A, B, C, and D are all passing grades. The letters are intended to indicate the following quality of work. A, exceptional; B, superior; C, medium; D, passing.

(2) Failed. A grade of F indicated that the student has failed the course, and in order to receive credit for the course she must repeat the work in class.

(3) Incomplete. (a) A grade of I may be reported by the instructor if for any reason she is unable to report the final grade at the regular time. (b) Incomplete courses must be completed before the close of the succeeding semester; otherwise the I is recorded as F, and the course must be repeated in class if the student is to receive credit for it.

(4) Absent from final examination. (a) The grade X indicates that the student was absent from the regularly scheduled examination. (b) If absence has been excused by the dean the student may take the examination as arranged by the instructor concerned. (c) If absence from the examination is not excused by the dean, the grade for the course concerned is recorded as F. (d) A student with an X grade who has not obtained a passing grade before the end of the semester following that in which the X was incurred is regarded as having failed in the course concerned and must repeat the work in class in order to receive credit.

Requirements for Degree

THE SCHOOL OF NURSING offers a program which is planned to cover a period of four years; one academic year, one summer term and three calendar years. At the completion of this program, the student receives the degree of Bachelor of Science in Nursing and is then eligible for the examinations given by the North Carolina State Board of Nurse Examiners.

To fulfill the requirements for the degree of Bachelor of Science in Nursing, a student must complete the program with a C average, must complete 134 semester hours as outlined below, earn 264 quality points, exclusive of Physical Education, and show proficiency in the practice of nursing.

The requirements for the degree of Bachelor of Science in Nursing are based on the principle that the student will derive the maximum benefit if the program includes a broad distribution of studies among representative fields.

For graduation with the degree of Bachelor of Science in Nursing, the following course work or equivalents must be completed.

Uniform Course Requirements	s.h.
Natural and Biological Science	23
Social Sciences	18
English	6
History	6
Religion	6
Elective (Literature, Music, Art Philosophy preferred)	6
Physical Education	2
Major (Nursing and related work)	67
Total	134

These requirements are described in detail below.

ENGLISH, 6 s.h.—This requirement is met by the completion of English 1-2. Students who demonstrate proficiency in English usage may be allowed to substitute 55 or 56 for English 1.

NATURAL AND BIOLOGICAL SCIENCE, 23 s.h.—To satisfy this requirement a student must complete laboratory courses in General Chemistry (3 s.h.), Physiological Chemistry (3 s.h.), Zoology (8 s.h.), Anatomy and Physiology (6 s.h.), and Microbiology (3 s.h.)

RELIGION, 6 s.h.—To meet this requirement 6 semester hours may be chosen from Religion 1-2, 51-52, 55, 65, 71, 85, 93.

SOCIAL SCIENCE AND HISTORY, 24 s.h.—To satisfy this requirement students must take Education 118, Psychology 91 and 116; and Sociology 91, 92 and 150. The remaining 6 s.h. may be selected from History 1, 2 or 51-52 (students who do not present for entrance 2 acceptable units of History must select History) and Political Science 11-12 or 61-62, and Economics 51-52.

LITERATURE, MUSIC, ART, AND PHILOSOPHY, 6 s.h.—This requirement can be satisfied by a total of 6 semester hours in courses in English or American literature, foreign literature courses numbered above 100, literature courses in translation, courses in aesthetics, art, music, and courses in Philosophy (except 48, 103, 104, 109, 199).

PHYSICAL EDUCATION, 2 s.h.—In the School of Nursing, Physical Education is required during the first year and must be completed by the end of the first year.

MAJOR AND RELATED WORK, 67 s.h.—This requirement is met by completing courses in the School of Nursing in accordance with the regulations described.

The work is divided as follows:

FIRST YEAR

English 1-2	English Composition	6 s.h.
History 1, 2 or Political Science 11-12	Modern History The American System of Government	6 s.h.
Religion 1-2 or Elective	The English Bible (Music 1-2, Art 1-2 or Philosophy)	6 s.h.
Nursing 1-2	Introduction to Nursing	4 s.h.
Zoology 1-2	Animal Biology, General Zoology	8 s.h.
Microbiology 4	Microbiology	3 s.h.
Chemistry 50	Chemistry	3 s.h.
Psychology 91	Introductory Psychology	3 s.h.
	Physical Education	2 s.h.
		41 s.h.

SECOND YEAR

Anatomy 51	Anatomy	3 s.h.
Physiology 51	Human Physiology	3 s.h.
Chemistry 51	Physiological Chemistry	3 s.h.
Nursing 91-92	General Nursing	13 s.h.
Sociology 91-92	General Sociology	6 s.h.
Nutrition 53	Nutrition and Diet Therapy	3 s.h.
Education 118	Educational Psychology	3 s.h.
Elective or Religion	(Art, Philosophy, or Literature) The English Bible	6 s.h.
		40 s.h.

THIRD YEAR

Nursing 120	Pediatric Nursing	6 s.h.
Nursing 130	Obstetric Nursing	6 s.h.
Nursing 140	Applied Nursing	12 s.h.
Sociology 150	Family Relations	3 s.h.
Psychology 116	Psychology of Adjustment	3 s.h.
Nursing 181	Public Health Sciences	3 s.h.
		33 s.h.

FOURTH YEAR

Nursing 160	Social Foundation of Nursing Education	3 s.h.
Nursing 170	Psychiatric Nursing	6 s.h.
Nursing 180	Public Health Nursing	6 s.h.
Nursing 190	Seminar in Nursing	6 s.h.
	Internship	
		21 s.h.

Description of Courses—Degree Program

UNDERGRADUATE COLLEGES

EDUCATION

118. EDUCATIONAL PSYCHOLOGY.—A study of psychology of learning; individual and social development; and psychology of adjustment, as related to problems of instruction and the processes of education. Prerequisite: Psychology 91. 3 s.h. Assistant Professor Palacios; Associate Proefssors Colver and Gehman

ENGLISH

1-2. FRESHMAN COMPOSITION.—Training in composition through the writing of weekly expository themes. The theme subjects derive from assigned reading drawn from British and American literature of the 20th Century. English 1 takes up the Essay, the Short Story, and the Novel; English 2, the Play and the Poem. The student attends each week (1) a general lecture on the reading for the week; (2) a section meeting, where the instructor and the students as a group discuss problems of composition and literature; and (3) an individual conference in which the instructor reads and grades the weekly theme and makes special assignments according to the needs of the student.

33. WRITING LABORATORY.—A non-credit course in elementary composition which may be elected by students who need it, or may be required of certain students.

ENGLISH AND AMERICAN LITERATURE AND LANGUAGE

55, 56. REPRESENTATIVE WRITERS.—The following works are studied in the first semester: Chaucer's Prologue to *The Canterbury Tales* and at least two tales, Shakespeare's *1 Henry IV, Hamlet,* or *King Lear,* and one other play, John Donne's *Poems* (selections), Milton's *Paradise Lost* (selections) and some of the shorter poems; in the second semester: Pope's *Poems* (selections), Fielding's *Joseph Andrews,* Keats' *Poems and Letters,* Arnold's *Selected Poetry and Prose,* Dickens' *Great Expectations,* Joyce's *Portrait of the Artist as a Young Man,* and Eliot's *The Waste Land and Other Poems.* 6 s.h. (E & W) Professor Bevington and Staff

HISTORY

1, 2. MODERN HISTORY.—This course is an introduction to the study of modern history with special reference to the issues in the modern world. Topics selected for emphasis are: the contest between liberty and authority in the modern state; changing economic organization and theory—capitalism and the challenges to it; the problems of peace and war among the states; the changing faith men live and die by. Beginning about 1500 with the rise of the European dynastic states, the story is pursued in the first semester to approximately 1848, and in the second through the two great world wars. The central theme in both semesters is the expansion of the influence of Western Europe throughout the world with some attention to the rise of the United States as a world power. 6 s.h. (W & E)

Sophomores and juniors are not admitted to this course.

Professors Ropp and Parker; Associate Professor Ferguson; Assistant Professors Hollyday, Scott, Tischendorf and Young; Drs. Crane and Gillin; Messrs. Bernhard and Limoli

51, 52. MODERN HISTORY.—An intoductory course for sophomores, juniors and seniors dealing with the topics indicated in the description of course 1, 2. 6 s.h. (W & E) Professors Acomb and Ferguson; Assistant Professors Hollyday, Scott, Tischendorf and Young; Dr. Crane and Mr. Limoli

51X, 52X. MODERN HISTORY.—A special section for seniors who have had no other history at Duke and who wish a course in history before completing their college career. The topics covered will be essentially the same as those indicated in the description of course 1, 2. 6 s.h. (W) Professor Ropp

PHILOSOPHY

49. ETHICS.—A philosophical consideration of such basic ethical concepts as *right* and *wrong, good* and *evil, freedom* and *duty*, together with a study of some of the major types of ethical theory. 3 s.h. (E & W)

PROFESSORS BAYLIS AND NEGLEY; ASSOCIATE PROFESSOR WELSH; DR. BINKLEY

POLITICAL SCIENCE

11-12. THE AMERICAN SYSTEM OF GOVERNMENT.—An introductory study of the principles and operation of the American government in the light of the present world position of the United States. (Only open to Freshmen.) 6 s.h. (E & W)

ASSOCIATE PROFESSOR SINDLER; ASSISTANT PROFESSOR NELSON

[Students completing 11 in the spring semester should take course 62.]

61-62. AMERICAN AND COMPARATIVE POLITICAL SYSTEMS.—An introduction to the theory and practice of modern government. The first semester is devoted to the study of American constitutional democracy. Topics examined include federal-state relations, the separation and interrelationships of the executive, legislative, and judicial branches of government, judicial review, the role of political parties and public opinion the formulation and execution of domestic and foreign policy, civil liberties. The second semester is devoted to a study of constitutional democracy in Great Britain and France with emphasis upon the similarities and differences between those systems and our own. Detailed attention is also given to an examination of the theory and practice of totalitarian dictatorship as exemplified in the U.S.S.R. 6 s.h. (E & W)

ASSOCIATE PROFESSOR SIMPSON; ASSISTANT PROFESSORS CHEEK, GILLESPIE, HAVENS AND LEACH

REQUIRED PHYSICAL EDUCATION

Two semester hours to be completed in two semesters are included in the 131 hours required for graduation.

At the beginning of the freshman year, after a series of tests have been given, individual conferences are held and each student is guided into the type of activity she most needs, as determined from the evaluation of the test scores and the results of the conference. This course continues for half of the semester after which all freshmen take fundamental movement and social recreation for the remainder of the semester.

During the second semester every student will elect two activities from those offered by the Department.

PROFESSORS GROUT, CHAIRMAN, BOOKHOUT AND LEWIS; ASSOCIATE PROFESSOR HOLTON; ASSISTANT PROFESSORS EDDY, SPANGLER, AND WOODYARD; MISS PROCTOR, MESDAMES KISTLER AND WRAY

PSYCHOLOGY

91. INTRODUCTORY PSYCHOLOGY.—An introduction to the facts, principles, and problems of normal adult psychology through a study of psychological methods as applied to motivation, emotions, perception, sensation, thinking, memory, learning, individual differences, and personality. 3 s.h. STAFF

116. PSYCHOLOGY OF ADJUSTMENT.—The course is planned to give an adequate understanding of problems of adjustment and of mental hygiene. Lectures and discussions cover an application of the principles and findings of normal and abnormal psychology as these relate to the adjustment of the average individual in our changing society; a survey of the principles of mental hygiene; discussions of current socio-cultural trends significant for individual adjustment. 3 s.h. (W)

ASSOCIATE PROFESSOR REICHENBERG-HACKETT

RELIGION

The uniform course requirement in Religion may be met in one of the following ways:

(a) by completing, in the freshman year, Religion 1-2;
(b) by completing, in the sophomore year or later, Religion 51-52;

(c) by completing, in the sophomore year or later, Religion 55; and one other course selected from those numbered 60-99.

Students who have fulfilled the uniform course requirement in Religion are eligible to elect any course numbered 100 and above, except those for which additional prerequisites are prescribed. (See Undergraduate Bulletin.)

1-2. THE ENGLISH BIBLE.—A comprehensive survey of the books of the Old and New Testaments, which examines their origin in the history of the people of the Bible, and which gives special attention to major persons and events. Students are encourage to evaluate the significance of the Bible, for the individual and for society. Open to freshmen only. 6 s.h. Staff

51-52. THE ENGLISH BIBLE.—Religion 1-2 adapted to the capabilities of sophomores, juniors, and seniors. Religion 51-52 is not open to freshmen, or to students who have received credit for Religion 1-2. 6 s.h. Staff

55. THE RELIGION OF THE BIBLE.—An introduction to the historical and critical study of the Old and New Testaments, which considers the principal persons, events, ideas, and practices contained in the Biblical record, and their significance for the present time. Religion 55 is not open to freshmen, nor to students who have received credit for Religion 1-2 or 51-52. 3 s.h.
Associate Professor Price, Assistant Professors Bradley and Daniels

65. JESUS: THE MAN AND HIS MESSAGE (formerly Religion 114).—The Gospel records will be examined in detail for the purpose of recovering the person and mission of Jesus. Attention will be given to conceptions of Christ in the history of the Church, and to his contemporary significance. Prerequisite: Religion 55. 3 s.h. Associate Professors Phillips, Assistant Professors Sales and Osborn

71. CHRISTIANITY IN THE WESTERN WORLD.—An historical study and evaluation of the major trends, developments, and interpretations of Christianity from New Testament times to the present with emphasis upon their relevance to an understanding of Christianity today. Prerequisite: Religion 55. 3 s.h.
Associate Professors Manschreck, Assistant Professor Daniels

85. INTRODUCTION TO CHRISTIAN ETHICS (formerly Religion 91).—A brief analysis of the Biblical and historical foundations which afford a basis for a Christian understanding of man's moral situation is followed by a study of some of the social implications of the Christian religion: marriage, race, the political and economic order, etc. The course considers the relation of Christian ethics to moral philosophy. Prerequisite: Religion 55. 3 s.h. Associate Professor Price, Assistant Professor Osborn, Mr. Langford

93. SURVEY OF THE WORLD'S LIVING RELIGIONS.—A brief study of religion in primitive culture is followed by an examination of the world's living religions in terms of historical development and the beliefs, practices and contemporary significance of each. Prerequisite: Religion 55, or the permission of the instructor. 3 s.h. Assistant Professor Bradley

SOCIOLOGY

91-92. GENERAL SOCIOLOGY.—An introduction to the scientific study of social life; its origin, evolution and organization as illustrated in the study of a number of concrete social problems. 6 s.h. (E & W) Staff

Soc. 150. The Family. Analysis of the American family as an institutionalized group and its relationship with other institutions and structural features such as social class and ethnic group. Special attention is devoted to methods of research in this area. 3 s.h. (formerly 250) Staff

ZOOLOGY

1. ANIMAL BIOLOGY.—The principles of biology as applied to animals. 4 s.h. (W & E) Assistant Professor Klopfer; Assistant Professor Sandeen and Staff

2. GENERAL ZOOLOGY.—A brief survey of the animal kingdom. Prerequisite: Zoology 1. 4 s.h. (W & E) PROFESSOR BOOKHOUT AND ASSOCIATE PROFESSOR HUNTER AND STAFF

SCHOOL OF NURSING

BIOLOGICAL AND PHYSICAL SCIENCE

Anat. 51. ANATOMY.—The student gains an understanding and appreciation of body structure and its relation to normal functions in health and abnormal functions in disease. Audio-visual aids are used extensively and in conjunction with laboratory work the anatomical structures are demonstrated on dissected human specimens. 3 s.h. PROFESSOR MARKEE AND STAFF

Physio. 51. HUMAN PHYSIOLOGY.—A study of the normal functions of the human body with references to their applications in health and disease. 3 s.h. PROFESSOR F. G. HALL AND STAFF

Chem. 50. CHEMISTRY.—A course in the fundamentals of general inorganic chemistry with particular emphasis on the needs of the student nurse. A brief introduction to organic chemistry. 3 s.h. PROFESSOR TAYLOR

Chem. 51. PHYSIOLOGICAL CHEMISTRY.—This course is designed to aid the student in understanding the chemical mechanism of the human body both in health and in disease. The student also acquires knowledge concerning the chemical basis of diagnosis and therapy. 3 s.h. PROFESSOR TAYLOR

Micro. 4. MICROBIOLOGY.—From the learning experiences included in this course the student is enabled to understand and appreciate her role in the prevention of microbial disease. 3 s.h. ASSOCIATE PROFESSOR WILLETT

NURSING AND ALLIED ARTS

N1-2. INTRODUCTION TO NURSING.—An introduction to basic human health needs and some of the methods of care to meet them. 4 s.h. ASSOCIATE PROFESSOR BROCKER; ASSISTANT PROFESSOR VAN HUBEN

Nutr. 53. NUTRITION AND DIET THERAPY.—This course considers the nutritional needs of individuals of varying ages and methods of meeting these needs under different economic and social conditions. Accepted principles of diet therapy are presented on which dietary modifications are based, as well as the practices based on these principles. 3 s.h. ASSOCIATE PROFESSOR MCLACHLAN

N91-92. GENERAL NURSING.—A study of the fundamentals of patient care. The aims of this course are to give the student a basic knowledge of the principles and skills of nursing care. Correlated experiences in patient care are provided. 13 s.h. PROFESSOR STEAD AND STAFF; PROFESSOR HART AND STAFF; PROFESSOR BUSSE AND STAFF; ASSOCIATE PROFESSOR INGLES; ASSISTANT PROFESSOR CAMPBELL; MESDAMES MARTIN, MITCHELL AND WHITE; MISS CRANE

N120. PEDIATRIC NURSING.—This course is designed to help the student understand the growth and development of well children and on this basis, acquire the ability to identify and meet the needs of children with illnesses or handicaps in the hospital and the community. Emphasis is placed on the child as an individual and his relationship to the family and society. 6 s.h. PROFESSOR HARRIS AND STAFF; ASSISTANT PROFESSOR FORGIONE; MISSES COX AND AGNER

N130. OBSTETRIC NURSING.—This course focuses on maternal and infant care in the hospital and community. Emphasis is placed on support and guidance to the pregnant family. 6 s.h. PROFESSOR CARTER AND STAFF; ASSISTANT PROFESSOR FORIGONE; MISSES MITCHAM; MESDAMES HOGUE, COUCH

N140. APPLIED MEDICAL-SURGICAL NURSING.—A study of ways by which the principles of nursing care can be modified and adapted to meet the needs of specific patients. Experiences are provided for the student in various selected areas of the hospital and community. 12 s.h. ASSOCIATE PROFESSOR SILVERMAN; ASSISTANT PROFESSOR HOGSED; MESDAMES DALTON AND ERBACH; MISS HANRAHAN

N160. SOCIAL FOUNDATION OF NURSING EDUCATION.—A survey of major historical, philosophical, and sociological factors which have affected development in Nursing and Nursing Education. The purpose of the course is to give the student a better understanding of the place of nursing in present day society and the responsibilities of the individual nurse toward that society. 3 s.h.
Professor Jacobansky; Associate Professor Brocker

N170. PSYCHIATRIC NURSING.—Program focuses on dynamic psychiatry and dynamic psychiatric nursing therapy. It includes opportunities for learning under close supervision through experience with one patient at a time. 6 s.h.
Professor Busse and Staff; Assistant Professor Spring; Mrs. Bullock, Mrs. McColl

N180. PUBLIC HEALTH NURSING.—Study of the philosophy and basic principles of public health nursing concurrent with planned and supervised practice in Durham County Health Department and the Outpatient Department of Duke Medical Center. 6 s.h. Associate Professor Brocker; Assistant Professor Young; Misses Harlan, Watling and Black

N181. PUBLIC HEALTH SCIENCES.—This course offers a body of knowledge derived from the field of public health which includes an introduction to such areas as; epidemology, environmental sanitation, bio-statistics and public health administration. 3 s.h. Miss Watling; Visiting lecturers

N190. SEMINAR IN NURSING.—The classes and clinical experiences are designed to consider the more complex nursing problems encountered in Medical-Surgical Nursing. Individual investigation under guidance in a selected area of special interest in Medical-Surgical Nursing and a wrtten report of this study is required. 6 s.h. Assistant Professor Wilson; Miss Davenport

N215. SEMINAR IN TEACHING.—Intensive study of principles, curriculum and methods in Nursing Education. The class will be limited to 10 students. Prerequisite Bachelor of Science in Nursing. 3 s.h. Professor Jacobansky

INTERNSHIP: The final summer of the Nursing Program is a three-month period designed as an Internship. This is a period of transition, from student status to graduate professional nurse, during which she will be provided with opportunities to observe and participate in leadership roles and nursing administration plans for patient care.

While participating in this internship, the nurse is employed by the Nursing Service of Duke Hospital and paid according to the prevailing salary scale.
Professor Clark; Miss Mitchell

General Regulations Governing Graduate Study

General Information

THE DEGREE of Master of Science is offered in the fields of Medical and Surgical Nursing, Maternal and Infant Health, Pediatric Nursing* and Psychiatric Nursing*. The programs are designed to increase the students' information relative to the area of specialization, promote opportunities for learning through self-directed activities, offer sustained experiences in the care of individual patient, to offer experiences in supervised teaching, and provide opportunities for personal and professional growth and development.

PREREQUISITES. A student seeking admission to the Graduate Program of the School of Nursing of Duke University must have received a Bachelor of Science Degree in Nursing (or the equivalent) from an accredited institution. The undergraduate program should be well rounded and of such quality as to give positive evidence of capacity for graduate study.

REGISTRATION. After the applicant has received notification of admission and has submitted a statement of acceptance of admission, she is eligible for registration. During the registration periods, she confers with the Director of Graduate Program of her major department, who prepares a course card, listing the course work to be taken during the semester.

TRANSFER OF GRADUATE CREDITS. Under certain circumstances a maximum credit of 6 units may be allowed for graduate courses completed elsewhere. The acceptance of credit up to this amount, however, will not reduce the minimum period of full-time registered residence at Duke University.

GRADES. Grades in the Graduate Program are as follows: *E, G, S, F,* and *I*. *E* (exceptional) is the highest mark. *G* (good) and *S* (satisfactory) are the remaining passing marks. *F* (failing) is below passing, and *I* (incomplete) indicates that some portion of the student's work is lacking, for a satisfactory reason, at the time the grades are reported. The instructor who gives an *I* for a course specifies the date by which the student must have made up the de-

* Not offered in 1960-61.

ficiency. In no case may an extension be granted beyond one calendar year from the date the course ended. If the course is not completed, a statement of *No Credit* is made upon the student's record.

WITHDRAWAL FROM THE GRADUATE PROGRAM:

If a student wishes for any reason to withdraw from the School she should notify both the director of the Graduate Program and the Dean of the School prior to the date of her expected withdrawal.

GENERAL FEES IN THE ACADEMIC YEAR. The following tables shows the general fees and changes collected from all students. All fees for each semester are due and payable, unless otherwise specified, at the time of registration for that semester. No student is admitted to classes until arrangements have been made with the Treasurer of the University for the settlement of fees.

Tuition per semester	$425.00
General fee* per semester	$ 75.00
Summer Session (two terms 12 units)	$342.00

Tuition and fees for a full semester program of 16 units amount to $500.00. For a part program, tuition and fees are computed at the rate of $32.50 per unit.

LIVING ACCOMMODATIONS:

Graduate students in the School of Nursing may occupy rooms in the School of Nursing residence. The rental charge for a single room is $395.00 for the 12 month period. The rental charge for a double room is $325 for each occupant. Rooms are rented for a period of not less than one semester unless special arrangements are made through the Housing Bureau. Room reservations are made through the Housing Bureau after official acceptance for admission to the University. Students may arrange for apartments or rooms in private homes in the city. The Housing Bureau of the University maintains a file of rooms and apartments listed with it for rental. Students may use this file as an aid to locating suitable living accommodations.

Program on Medical-Surgical Nursing

Fall Semester

N201	Advanced Medical and Surgical Nursing	8 units
N203	Thesis Seminar in Patient Care	2 units
N205	Seminar in Psychophysiological and Interpersonal Aspects of Nursing	2 units
Soc. 290	Methods in Sociological Research	3 units
		15 units

Spring Semester

N202	Advanced Medical and Surgical Nursing	8 units
N204	Thesis Seminar in Patient Care	3 units

N206	Seminar in Psychophysiological and Interpersonal Aspects of Nursing	2 units
N207	Seminar in Nursing Research	2 units
		15 units

Summer Session

	Electives	12 units

Program on Maternal and Infant Health

Fall Semester

N209	Maternal and Infant Health	6 units
N211	Thesis Seminar in Patient Care	2 units
N205	Seminar in Psychophysiological and Interpersonal Aspects of Nursing	2 units
Soc. 290	Methods in Sociological Research	3 units
	Electives	3 units
		16 units

Spring Semester

N210	Maternal and Infant Health	6 units
N212	Thesis Seminar in Patient Care	3 units
N206	Seminar in Psychophysiological and Interpersonal Aspects of Nursing	2 units
N207	Seminar in Nursing Research	2 units
	Electives	3 units
		16 units

Summer Session

N213	Field Work in Maternal and Infant Health	4 units
	Electives	6 units

N201-202. ADVANCED MEDICAL AND SURGICAL NURSING.—This course is designed to increase the student's understanding of the cause and effect of pathologic physiology, and ways by which the alterations produced are managed.

Laboratory: Students spend from 20-30 hours per week studying patient care. Rotation experiences are planned with the chief of service in cardiovascular renal disease, respiratory disease, thoracic surgery, gastroenterology, gastric surgery, neurology, neurosurgery, and with the chairman of the department of medicine on a medical ward. In addition, students have a six weeks' elective experience. Students are welcome to participate in any experiences available in Duke Hospital and the community which they feel will provide learning opportunities. They may attend any conferences they wish, and audit classes, or parts of classes, which they feel will be helpful. No prescribed reading assignment is made. References may be suggested by the instructors, but, in general, the students are encouraged to become familiar with the library and to select their own reading. 16 units

ASSOCIATE PROFESSOR INGLES AND STAFF; MEDICAL AND SURGICAL STAFF

N203-204. THESIS SEMINAR IN PATIENT CARE.—Each Friday afternoon one student presents a patient. Members of the medical team who can contribute to the student's understanding of the patient and the patient's illness are invited to participate as resource persons. A thesis is required. 5 units

ASSOCIATE PROFESSOR INGLES; ASSISTANT PROFESSOR BOGDONOFF

N205-206. SEMINAR IN PSYCHOPHYSIOLOGICAL AND INTERPERSONAL ASPECTS OF NURSING.—The students meet in a group twice a week with a member of the psychiatric staff who is active in psychophysiological research and clinical areas. The meetings are informal and are aimed at two major areas. (1) An understanding of the interaction of psychic and somatic processes with particular emphasis on the neurophysiologic and psychoendocrinologic factors which may

mediate psychosomatic processes. The discussions are usually focused on patients being seen by the students. (2) To explore the meaning and results of the students' interaction with patients, doctors, nurses and other hospital personnel. The investigation of the students' own feelings, attitudes and behavior should lead them to a better understanding of the behavioral and psychosomatic implications of psychologic difficulties, and this should permit them to establish more meaningful patient care programs. 4 units Dr. Sanford Cohen

N207. SEMINAR IN NURSING RESEARCH.—A course designed to acquaint the student with basic techniques and problems in current nursing research. 2 units Associate Professor Preiss; Associate Professor Ingles; Assistant Professor Grant

N209-210. MATERNAL AND INFANT HEALTH.—A study of the trends in maternal and infant care with the aim of increasing the students' ability to contribute to the maintenance and improvement of family-centered care.

The course includes classes and seminars in advanced anatomy and physiology of the normal reproductive system; in genetics, bio-chemistry and endocrinology as they relate to human reproduction; in pathological conditions that may complicate the process of pregnancy; and in embryology, and physiology and development of the fetus and the infant.

Laboratory: Emphasis on continuity of care of the individual mother and infant is planned by offering experiences in special clinics, working with individual obstetricians and pediatricians, making home visits, teaching mothers' classes, giving support in labor and delivery, caring for mother and infant in Rooming-In, and following the family unit in the post-natal period. Students may attend classes, conferences and clinics at Duke University and other community agencies in order to enrich their knowledge of family-centered care. 12 units.

Assistant Professor Grant and Staff; Members of the Obstetric and Pediatric Staff

N211-212. THESIS SEMINAR IN PATIENT CARE.—Weekly seminars will be held in which students will present nursing problems related to the care of the mother and/or infant as members of a family. Members of the medical team and community agencies will be invited to attend as interpreters and resource people. 5 units. A thesis is required. Assistant Professor Grant and Staff; Members of the Obstetric and Pediatric Staff

N213. FIELD WORK IN MATERNAL AND INFANT HEALTH.—Field work will be provided in hospitals and community agencies. 4 units

RESEARCH AND TEACHING FELLOWSHIPS

Application for one year research and teaching fellowships may be made by students who have completed creditably a Masters degree in Nursing. Students will be enrolled in the Graduate School of Duke University and courses taken will be on the graduate level. The program of study will be planned jointly by the director of the graduate nurse program and the director of the department in which the major is taken.

THE SCHOOL OF FORESTRY

Fall Semester begins September 15, 1960

Spring Semester begins February 2, 1961

Forestry in Duke University

DUKE UNIVERSITY, located at Durham, North Carolina, comprises Trinity College, the Woman's College, the College of Engineering, the Graduate School of Arts and Sciences, and the professional schools of Forestry, Divinity, Law, Medicine, and Nursing. The University goes back in its origin to 1838, when Union Institute was founded in Randolph County by the Methodists and Friends. In 1851 the institution became Normal College, one of the first schools in America for the training of teachers. In 1859 the name was changed to Trinity College and so continued until 1924, when the College became a part of Duke University.

By virtue of an indenture of trust, executed December 11, 1924, by James Buchanan Duke, a great benefaction was placed at the disposal of humanity by providing for hospitalization, church work in rural communities, and education. The principal feature of the educational provision was the creation of Duke University.

The University, with a student body of over 5,700, occupies two campuses. The Woman's College campus of 108 acres was formerly the campus of Trinity College. About a mile west are the new units of the University, known as the West Campus, totaling 467 acres. It was first occupied in September, 1930.

Forestry in Duke University began early in 1931 when the Duke Forest was placed under intensive forest management and forestry research was initiated. An academic-forestry curriculum, designed for students intent upon pursuing the study of forestry as a profession, was organized in Trinity College of Duke University in 1932. This program was enlarged in 1956 and now includes some 60 cooperating colleges and universities.

In 1938 the School of Forestry was organized at the graduate level and a curriculum was offered leading to the degree Master of Forestry. Work leading to the degree Doctor of Forestry has been offered since 1940. The School has been fully accredited since its origin. A degree in technical forestry is not offered at the undergraduate level at Duke University.

Graduates of recognized scientific schools or colleges, universities, and professional schools of forestry, and other men who meet the entrance requirements of the school may enroll for training in technical forestry leading to the professional degrees, Master of Forestry and Doctor of Forestry. The Graduate School of Arts and Sciences,

also offers graduate work in certain aspects of forestry leading to the degrees Master of Arts and Doctor of Philosophy. This work is available to graduates of schools of forestry of recognized standing, and to college or university graduates holding a Bachelor's degree with their major work in appropriate subjects.

Students taking undergraduate work and who are planning to enter the School for work towards the Master of Forestry or Doctor of Forestry degree should refer to the section in this announcement where entrance requirements are presented.

Educational Facilities

A description of the facilities of the School of Forestry and of the Duke Forest is given in the *Bulletin of the School of Forestry.*

Requirements for Admission to the School of Forestry

THE admission requirements of the School of Forestry for work toward the MASTER OF FORESTRY degree presuppose that an applicant is either:

1. A graduate of a professional school of forestry, or

2. A graduate of a college or university of high standing, but without professional training in forestry, or

3. A student who has successfully completed the pre-forestry curriculum of one of the colleges cooperating in the academic-forestry training program.

Each applicant must present a certified transcript of his academic record showing the courses he has taken, the number of credit hours he has earned and the grades received. The total number of quality points* must be at least two and one half times the total credit hours to meet the minimum scholastic standards required for admission to the School. An applicant also must have satisfactorily completed undergraduate work in minimum amount, as follows:

One year of biology, including at least one semester of botany, or one year of botany.

One year each of English composition and of chemistry.

One course each in physics and in the principles of economics.

Mathematics, through college algebra and trigonometry.

It is urged that an applicant without professional training in forestry present additional credits in the above subjects and in one or more of the following subjects: soils, geology, mineralogy, petrology, climatology, surveying, languages (particularly German and French), sociology, political science, philosophy, psychology, and zoology.

An applicant who is a graduate of a professional school of forestry will present a certified transcript of scholastic record showing the award of a degree. Before registering for the first semester of residence, such applicants will be required to select the branch or branches of forestry in which they wish to concentrate the major part of their work and to prepare their proposed programs in conference with the

* Grades for each hour of college credit are valued in quality points as follows: "A," 4 points; "B," 3 points; "C," 2 points; "D," 1 point; and "F," no points.

appropriate faculty adviser. Ordinarily, graduates of a fully accredited school of forestry should be able to meet all requirements for the Master of Forestry degree in one full school year of resident study; others may require a longer period of residence.

Students must make application for admission in advance of the opening of the school year. Those students entering without acceptable courses in plane surveying, forest surveying, and forest mensuration must take the work in these subjects in the Summer Session, and are required to submit their applications prior to May 1. Students entering with advanced standing in these courses should make application before September 1. Application blanks will be sent upon request made to the Dean of the School of Forestry.

Admission to the School of Forestry for a program of study and research leading to the degree, DOCTOR OF FORESTRY, is granted to a student who has received the degree, Master of Forestry, or its equivalent from a school of forestry of recognized standing, and who has achieved an average of three quality points per hour of credit in his previous graduate studies.

An applicant must file a formal application for admission together with transcripts of his undergraduate and graduate academic records. In his application he should clearly state the branch of forestry in which he desires to concentrate, and if possible, the specific research.

The Committee on Admissions of the School of Forestry, together with the prospective student's major adviser, will determine if the qualifications of the applicant meet entrance requirements.

GRADES. Beginning September 1, 1960, grades in the School of Forestry will be as follows: E (exceptional); G (good); S (satisfactory); F (failing) and I (incomplete). The instructor who gives an I for a course specifies the date by which the student must make up the deficiency. In no case may an extension be granted beyond one calendar year from the date the course ended. If the course is not completed, the statement, NO CREDIT, is made upon the student's permanent record.

Cooperative Plan of Study with Selected Colleges and Universities

Since its inception the Duke School of Forestry has had the cooperation of Trinity College (the men's undergraduate college of arts and sciences of Duke University) in preparing students for professional careers in forestry. Under the plan, a student devotes his first three years to a coordinated and carefully integrated program of study in the basic arts and sciences in Trinity College. The summer between his junior and senior year and the two following school years are spent in the School of Forestry. Upon the successful completion of this five-year course of study, a student has earned the Bachelor of Science degree from Trinity College and the professional Master of Forestry degree from the Duke School of Forestry.

Based upon the experience and success of this cooperative program with Trinity College, the School of Forestry in 1952 initiated similar programs of collaboration with a selected group of colleges and universities located throughout the United States. These programs offer students the numerous advantages of a broad background in liberal arts and sciences as preparation for later professional training. A student intent upon following such a course of study should make application to one of the colleges listed in the *Bulletin of the School of Forestry*. Admission requirements and other information pertinent to matriculation may be obtained from each of these institutions. Not later than the end of the first semester of the third year in the college or university of his choice, the student must make formal application for admission to the Duke School of Forestry. To qualify for admission under these programs, a student must have followed a planned course of study arranged in consultation with his adviser, must have the official recommendation of his college, and must meet the minimum requirements for admission to the Duke School of Forestry.

A list of cooperating schools is given in the *Bulletin of the School of Forestry*.

Fellowships, Scholarships, and Assistantships

DUKE UNIVERSITY has allocated a number of fellowships, scholarships, and assistantships to the School of Forestry for the encouragement and financial assistance of men who offer promise of becoming leaders in the forestry profession. These are awarded for high character and marked scholastic ability as judged by education, experience, and personal references. For more detailed information see the *Bulletin of the School of Forestry*.

Tuition, Fees, and Expenses

THE following table shows the general fees and charges collected from all students. All fees for each semester are due and payable, unless otherwise specified, at the time of registration at the beginning of that semester, and no student is admitted to classes until arrangements have been made with the Treasurer of the University for the settlement of fees.

General Fees

Tuition, per semester	$425.00
General Fee, per semester	60.00
Spring trip fee	10.00

Forestry students may obtain admission to all regularly scheduled University athletic contests held on the University grounds during the entire academic year by payment of the athletic fee of $10.00 per year plus any Federal taxes that may be imposed. This fee is payable in the fall semester.

TRANSCRIPTS: A student desiring to transfer from Duke University to another institution is entitled to one transcript of his record. A charge of one dollar is made for each additional copy.

PAYMENTS TO FELLOWS AND SCHOLARS: Payments by the University of stipends to fellows and scholars are made in eight

monthly installments, beginning October 20. Fellows and scholars are required to pay the regular tuition fee and such additional fees as are ordinarily required of graduate students.

Rooms for men are provided in the Men's Graduate Center. Food Service is available. For complete information see the *Bulletin of the School of Forestry*.

Requirements for the Degree of Master of Forestry

THE requirements for the degree of Master of Forestry (M.F.) are governed by the extent of the student's previous professional training. Normally, students who have been awarded the degree of Bachelor of Science in Forestry, or equivalent, at an accredited school of forestry may complete the requirements for the M.F. degree in one academic year. Students who have had no prior professional training in forestry are required to complete one summer session and two academic years of resident study. Graduate work of equivalent grade done in residence at other institutions may, with the approval of the Faculty, be accepted as credit toward the degree, but a minimum of one year of residence at Duke University is required.

The submission of a thesis for the M.F. degree usually is required. In exceptional cases, and with the approval of the Faculty, an acceptable report on a special study may be submitted in lieu of a thesis, credit for which will not exceed three semester hours. Four copies of the thesis, typewritten and bound in accordance with regulations set forth by the Faculty, must be deposited with the Dean of the School of Forestry on or before May 15 of the academic year in which the student expects to obtain the M.F. degree.

No student may take less than fourteen nor more than eighteen semester hours of credit per semester without special permission of the Faculty.

SUMMER SESSION

	S.H.
Plane Surveying (C.E. S110)	4
Forest Surveying and Aerial Photo Interpretation (F. S150)	4
Forest Mensuration (F. S151)	4

FIRST YEAR

First Semester

	S.H.
Harvesting and Utilization of Forests (F. 211)	4
Forest Pathology (F. 223)	3
Dendrology (F. 241)	3
Silvics (F. 243)	3
Forest Soils (F. 261)	3

Second Semester

	S.H.
Harvesting and Utilization of Forests (F. 212)	2
Theory and Practice of Silviculture (F. 244)	3
Wood Anatomy (F. 290)	3
Economics of Forestry (F. 270)	3
Sampling Methods in Forestry (F. 251)	3
Forest Entomology (F. 230)	3

SECOND YEAR

Two curricula in forestry are available after the common minimum requirements of the first year have been met. One is the SILVICULTURE-MANAGEMENT combination; the other is in FOREST PRODUCTS. The election of a curriculum to be followed is made prior to the autumn semester of the second year. The required work in each curriculum is as follows:

SILVICULTURE-MANAGEMENT CURRICULUM

First Semester	S.H.	*Second Semester*	S.H.
Forest Management (F. 281)	3	Forest Policy (F. 276)	2
Economic Analysis in Forestry (F. 379)	3	Seminar in Forest Management (F. 386)	2
Forest Protection (F. 283)	2	Seminar in Silviculture (F. 348)	1
Forest-Tree Physiology (F. 201)	4	Soils-Silviculture-Management Field Seminar (F. 368)	2
Thesis research or electives	3-6	Thesis research or electives	8-11

FOREST PRODUCTS TECHNOLOGY CURRICULUM

First Semester	S.H.	*Second Semester*	S.H.
Forest Management (F. 281)	3	Wood Finishes and Finishing (F. 394)	2
Wood-Moisture Relations (F. 291)	2	Time and Motion Studies (Eng 198.2) or Industrial Management (Ec. 105)	3
Wood Preservation (F. 293)	2	Seminar in Forest Products Technology (F. 399)	1
Timber Physics (F. 397)	2	Cost and Quality Controls in Forest Utilization (F. 312)	3
Bonding of Wood (F. 395)	3	Wood Chemistry (F. 396)	2
Thesis research or electives	3-6	Thesis research or electives	4-7

Requirements for the Degree of Doctor of Forestry



THE degree Doctor of Forestry (D.F.) is a professional and research degree conferred on those students who have satisfactorily completed specified requirements of advanced study and research. Although course work is a necessary part of a student's program, the mere accumulation of course credits will not be sufficient for the attainment of this degree. The granting of the D.F. degree is based primarily upon the student's thorough knowledge of a specialized field of study and upon the production of an acceptable dissertation embodying the results of original research.

Work toward the D.F. degree, consisting of advanced studies in a major and a minor field, is offered with majors in the following branches of forestry: forest economics, forest entomology, forest management, forest mensuration, forest pathology, forest soils, forest-tree physiology, forest utilization, silvics, silviculture, and wood and forest products technology. Minors may be in any of these branches of forestry or in other areas of specialized study in the University approved by the Graduate School of Arts and Sciences. Prospective students should correspond with the Dean of the School of Forestry on all matters pertaining to admission to the School.

PROGRAM OF STUDY: A committee consisting of five members of the Faculty will be appointed by the Dean to supervise the work of each student. This committee shall consist of a major adviser, a minor adviser and three other faculty members. The major adviser will serve as Committee Chairman.

The major and minor advisers, in consultation with the student, will prepare a proposed program of study and research which will be presented to the Committee for consideration. Upon its acceptance by the Committee it will then be presented to the Faculty of the School of Forestry for final approval. If in the judgment of the Committee the student's training is inadequate he may be required to remedy such deficiencies by taking certain undergraduate courses as prerequisites to continued graduate study, but which will carry no graduate credit.

The program will consist of courses, seminars, and arranged work approved for graduate credit by the faculty of the School of Forestry, and research. Satisfactory completion of a minimum of 30 semester hours of formalized academic work in which the student must attain a grade of E or G in at least 12 hours is required of all prospective candidates. Credit hour requirements for the major and minor fields are determined by the Committee. No minimum credit requirements are established for the major field, but the minor field must consist of at least 12 semester hours, part or all of which may have been taken as a part of the program for the Master's degree.

FOREIGN LANGUAGES: A reading knowledge of two foreign languages is required. Normally these will be French and German. Spanish or another foreign language may be substituted for either French or German when deemed advisable by the Committee. The foreign language examinations will be conducted by the appropriate language departments of Duke University. Upon recommendation by the appropriate language department, and the approval of the Faculty of the School of Forestry, one of the language requirements may be satisfied by transfer of documented evidence of the successful completion of similar requirements from an approved institution. At least

one of the language requirements must be met during or before the student's first regularly enrolled semester at Duke University. Students not able to comply with this regulation will be required to reduce their maximum allowable load in succeeding semesters by 3 semester hours until the first language requirement has been met. The second language requirement must be met before the student is permitted to take the comprehensive preliminary examination. Enrollment in non-credit language courses at Duke University will be considered a part of the student's maximum allowable load in any one semester.

LANGUAGE EXAMINATIONS: On Monday of the fall registration period and on the day before spring registration, reading, vocabulary, and grammar tests in French and German are offered (see the Calendar for hour and place). Any entering student who has not taken these tests may do so. On the basis of his scores the student will (1) be certified as meeting requirements in these languages, (2) be advised to present himself for the regular reading examinations at the first opportunity, or (3) be advised to enroll in the special reading courses (see below).

READING EXAMINATIONS: At dates listed in the Calendar, reading examinations in French and German are offered. Reading examinations in other languages must be separately arranged.

Students requiring the reading examination at other times must pay a special fee of $5.00 prior to registering in the Graduate Office for the examination. Students who require re-examination at scheduled times will be charged $5.00 for each re-examination; if special times are necessary, the fee will be $10.00.

COMPREHENSIVE EXAMINATION: At least six months before the student expects to receive the D.F. degree, and after he has completed most of his formal course work, he will be required to take a comprehensive examination. The examination will be written in subject areas specified by the Committee and may be followed by an oral examination given by the Committee. The decision as to whether the examination has been passed or failed is the responsibility of the committee.

PRIVILEGE OF RE-EXAMINATION: Should the student fail the comprehensive examination, he may apply, with the consent of his supervisory committee and of the Dean of the School of Forestry, for the privilege of a second examination to be taken no sooner than six months after the date of the first. Failure on the second examination will render the student ineligible to continue his program for the D.F. degree at Duke University.

Upon satisfactory completion of the comprehensive examination the student will be considered a candidate for the D.F. degree.

RESIDENCE REQUIREMENTS: The minimum period of study beyond the M.F. degree, or its equivalent, is two years of academic work of which at least two regular semesters must be spent in full-time study on the campus in Durham. Graduate work of a fragmentary nature taken over a period of several years will not meet this requirement. Course work of equal grade taken at another college or university of approved standing may, with approval of the Faculty of the School of Forestry, be accepted in partial fulfillment but shall not exceed 15 semester hours of the total requirements for the period of study. Such transfer of credit may not under any circumstances be used to reduce the two regular semesters of full-time study which must be spent at Duke University. Course work taken under the cooperative interchange of registration plan between the graduate schools of Duke University and the Consolidated University of North Carolina is considered the same as work taken on the campus in Durham.

A student who has successfully completed the 30 hours of required formalized study, met the language requirements, and passed the comprehensive examination, may, with the approval of his supervisory committee and the Dean of the School of Forestry, continue his research and complete his dissertation *in absentia*. Under this arrangement he is required to register for one hour of research credit each semester until the degree has been awarded.

A student who remains in residence after passing the preliminary examination must register for a minimum of three semester hours of research credit each semester unless his course-seminar registration is at least nine hours, in which case the 3-hour registration requirement is waived.

DISSERTATION: In addition to obtaining adequate training in the field of his specialty, the student must demonstrate his ability to plan and conduct sound, original research. Evidence of this accomplishment must be presented in the form of an acceptable dissertation embodying the results of original work, which is a definite contribution to knowledge.

The subject of the dissertation must receive the approval of the Faculty, and the title filed with the Dean of the School of Forestry on or before October 15 of the academic year in which the candidate desires to take his final examination.

After the dissertation has been approved by the major adviser, and at least 10 days prior to the date set for the final examination, the candidate is required to deposit with the Dean of the School of Forestry the original and three typewritten and temporarily bound copies together with 10 copies of an abstract of the dissertation consisting of not more than 600 words. Following acceptance of the dissertation by the Committee, the student will deposit with the Dean of

the School of Forestry on or before April 15 of the academic year in which the student expects to obtain the D.F. degree, the original, unbound copy of the dissertation together with three bound copies, and 10 copies of the approved abstract. The first carbon copy will be deposited in the University Library, the major adviser will receive one copy, and the fourth copy will be returned to the student. The original copy will be sent to University Microfilms, Ann Arbor, Michigan, where it will be reproduced and published on microfilms. Later the original will be returned to Duke University where it will be bound and deposited in the University Library.

The basic requirements for preparing the dissertation are described in the *Manual of Style for Theses and Dissertations* to be obtained from the Duke University Book Store, West Campus. Additional instructions concerning the microfilming, preparation of title page and the abstract should be obtained from the Dean of the School of Forestry.

At the time the final approved copies of the dissertation and the abstract are deposited with the Dean of the School of Forestry, the candidate must show evidence of having paid a fee of $25.00 to the Treasurer of the University to cover the costs of microfilming.

FINAL EXAMINATION: The final examination will be in defense of the candidate's dissertation and on related subject matter. It will be oral and will be conducted by the supervisory committee. At least six months must elapse between the dates of the preliminary and the final examinations.

Forestry in the Graduate School of Arts and Sciences

MAJOR and minor work is offered in several disciplines of forestry leading to the A.M. and Ph.D. degrees, which are administered by the Graduate School of Arts and Sciences. Work for these degrees may be pursued only in forest-tree physiology, wood anatomy and properties, forest pathology, silvics, forest soils, forest mensuration, forest entomology, and forest economics. Students who have had specialized training in botany or soil science and in allied basic subjects, such as physics, chemistry, geology, and zoology, may pursue graduate study and research only in the specialized fields for which their previous work has qualified them. Students who do not have previous training in forestry will be required to complete a minimum of thirty semester hours of approved work in forestry as a preliminary requirement to advanced study for the A.M. and Ph.D. degrees.

Applicants for admission to the Graduate School must ordinarily have made, in their undergraduate work, not less than a "B" average and must not have concentrated excessively in one field of study to the detriment of a rounded program. They should have met substantially the requirements for the A.B. or B.S. degree at Duke University.

In addition to fulfilling the usual requirements for admission, the applicant must satisfy the Director of Graduate Studies in Forestry as to his liberal arts training, as well as to his preliminary training in the field of forestry.

For detailed information concerning admission to the Graduate School, and for regulations governing candidacy for the A.M. and Ph.D. degrees, language requirements, residence requirements, and other regulations concerning these degrees, the student should consult the *Bulletin* of the Graduate School of Arts and Sciences.

Courses and Subjects of Instruction

With the exception of the Summer Session courses, odd-numbered courses are usually offered in the autumn semester, and even-numbered courses are offered in the spring semester.

SCHOOL OF FORESTRY COURSES

IN THE SUMMER SESSION

C.E. S110. PLANE SURVEYING.—Use and adjustment of instruments; transit-tape, stadia, and plane table surveying; differential and profile leveling; calculation of bearings, latitudes, departures, and areas; accuracy and errors; celestial observations for azimuth; triangulation. Prerequisites: trigonometry; engineering drawing desirable. *Four weeks, eight hours a day beginning June 11, 1960.* 4 s.h. (w)
MR. THARP

S150. FOREST SURVEYING AND AERIAL PHOTO INTERPRETATION.—Application of plane surveying to forest problems; practice in making boundary, topographic and cover type surveys; details of land ownership and transfer, title search, and deed descriptions. The last two weeks will be spent in the study of the principles of aerial photogrammetry and photo interpretation, and may be taken separately for 2 hours of credit. Prerequisites: Civil Engineering S110, or equivalent. *Four weeks, eight hours a day, beginning July 11, 1960.* 4 s.h. (w)
MR. CHAIKEN

S151. FOREST MENSURATION.—Field studies in methods of measuring content and growth of trees and forest stands; practice in timber estimating, log scaling, use of mensurational instruments, and collection of basic data. *Four weeks, eight hours a day, beginning August 8, 1960.* 4 s.h. (w) MR. SCHUMACHER

FOR SENIORS AND GRADUATES

201. FOREST-TREE PHYSIOLOGY.—The principal physiological processes of trees, including water relations, synthesis and use of foods, and growth phenomena. Prerequisites: Botany 1-2 or equivalent; one year of chemistry. 4 s.h. (w)
MR. KRAMER

211-212. HARVESTING AND UTILIZATION OF FORESTS.—Methods of harvesting, processing, and marketing forest products with emphasis on methods and costs in managed North American forests. A two-week field trip in the spring semester is part of the required work. Students having the equivalent of F. 211-212 may take the field trip by registering for 212A for 1 hour of credit. F-211—4 s.h.; F-212—2 s.h. (w) MR. WACKERMAN

216. LUMBER MANUFACTURE.—Methods of processing logs for sawn products with emphasis on the principles involved in obtaining maximum volume and quality yield for large and small mills; trends in lumber consumption by regions; use of waste for by-products; the development of new lumber products; and industry problems. Prerequisite: Forestry 211-212 or equivalent. 3 s.h. (w) MR. WACKERMAN

223. FOREST PATHOLOGY.—Infectious and non-infectious diseases of forest trees, and related deterioration of forest products. Field and laboratory study of symptoms, etiology, and control. Prerequisites: Botany 1-2, or equivalent. 3 s.h. (w) MR. JOHNSON

230. FOREST ENTOMOLOGY.—Principles of protecting forests from insect attack; character of insect damage to forest trees and their products; identification and biology of important species; survey methods and control. 3 s.h. (w)
MR. ANDERSON

232. FOREST-PRODUCTS ENTOMOLOGY.—Recognition of insect damage to wood products; etiology, biology and control of important species. 2 s.h. (w)
MR. ANDERSON

241. DENDROLOGY.—Nomenclature, classification, and identification of woody plants with special reference to species indigenous to southeastern United States and other important forest regions of temperate North America. Laboratory and field work. Prerequisite: one year of biology. 3 s.h. (w)
MR. HARRAR AND MR. WHITE

243. SILVICS.—Ecological foundations of silviculture with special reference to forest site factors; influence of forests on their environment; growth and development of trees and stands; origin, development, and classification of forest communities; methods of studying forest environments. Desirable prerequisites: plant physiology, plant ecology, and Forestry 261, or equivalents. 3 s.h. (w)
MR. WOODS

244. THEORY AND PRACTICE OF SILVICULTURE.—Principles governing natural regeneration and treatment of forest stands and their application; reproduction methods, intermediate cuttings, and cultural operations. Field practice includes marking for various kinds of cuttings, cultural treatments, and study of managed stands in the Duke Forest. Prerequisite: Forestry 243 or equivalent. 3 s.h. (w) MR. WOODS

245. REGIONAL SILVICULTURE.—Application and comparison of silvicultural practices to principal commercial forest species, types and regions of temperate North America. Prerequisite: Forestry 244 or equivalent. 1 s.h. (w) MR. WOODS

248. FOREST REGENERATION.—Fundamentals and practices of regenerating forest stands. Genetic control through recently developed propagating techniques; seed handling in the field, and during preparation for use; techniques for large production tree nurseries; the use of heavy equipment, chemicals, and fire for site preparation and timber stand improvement; recent developments in direct seeding and planting. 3 s.h. (w) MR. WOODS

251. SAMPLING METHODS IN FORESTRY.—Statistical background for solution of sampling problems with special references to sample inventory of a forest property. Offered both semesters. Prerequisite: Forestry S151. 3 s.h. (w)
MR. SCHUMACHER

257. DESIGN OF FORESTRY EXPERIMENTS AND ANALYSIS OF DATA.—Role of experimental design in field and laboratory, and statistical analysis of data as aspects of the scientific method in forestry research. 5 s.h. (w) MR. SCHUMACHER

261. FOREST SOILS.—Origin, development, and classification of soils with special emphasis on those developed in humid climates; morphological, physical, and chemical properties of soils in relation to growth of trees; effect of forests on soils. Prerequisites: Chemistry 1 and 2, and Physics 1, or equivalent; physical geology, mineralogy, petrology, and analytical chemistry are also desirable. 3 s.h. (w)
MR. RALSTON

270. ECONOMICS OF FORESTRY.—Principles of economics used in the analysis of factors affecting the supply of forest products, pricing of stumpage and primary forest products, factors affecting the demand for forest products, economic characteristics and problems of the major forest products industries; analysis of such specific private forestry problems as marketing, forest ownership pattern, taxation, credit, risk, and economic fluctuations. Prerequisite: at least one course in the principles of economics. 3 s.h. (w) MR. YOHO

272. MARKETING FOREST PRODUCTS.—Methods of selling and distributing lumber, timber, and other important forest products in domestic and foreign trade; trade association functions; regional competition for markets; and transportation problems. Prerequisites: Forestry 211-212 and 270 or equivalents. 2 s.h. (w)
MR. WACKERMAN

276. FOREST POLICY.—Objective study and analysis of the development of public land and forestry policies in the United States, present policies of public and private forestry organizations, and current policy issues in the light of economic and other criteria. Prerequisites: Forestry 281, 283. 2 s.h. (w) MR. YOHO

281. FOREST MANAGEMENT.—Principles of organizing forest properties for systematic management; use of data obtained in surveys and inventories; principles of forest regulation, including a study of normal and actual forests, rotations, cutting cycles, and methods of regulating the cut in even-aged and all-aged forests for sustained yield; introduction to the preparation of preliminary forest management plans. Prerequisites: Forestry S150, S151, or equivalents. 3 s.h. (w) MR. CHAIKEN

283. FOREST PROTECTION.—Principles of forest protection; causes, character and effects of forest fires; principles of forest fire prevention, presuppression and suppression; fire control costs and fire plans; protection against domestic animals, wildlife, and atmospheric agencies. 2 s.h. (w) MR. CHAIKEN

285. FOREST-GAME MANAGEMENT.—Principles of management for the sustained production of desirable game and fur animals on forest lands; characteristics and biology of important species. 2 s.h. (w) MR. ANDERSON

286. FOREST-RANGE MANAGEMENT.—Principles of livestock management by which sustained maximum use can be obtained from forest grazing lands. 2 s.h. (w) MR. ANDERSON

290. WOOD ANATOMY.—Study of the physical features and the gross and minute structural characteristics of wood leading to the identification of the commercial woods of the United States, and the important tropical woods used in American wood-working industries. Elementary microtechnique. Prerequisites: one year of biology; Forestry 241 or equivalent. 3 s.h. (w) MR. SULLIVAN

291. WOOD-MOISTURE RELATIONS.—Physical principles underlying the response of wood to moisture and its removal; the concept of equilibrium moisture content. Principles and methods involved in drying lumber and other wood products as a step in preparing them for use. Prerequisites: Forestry 211-212, and 290 or equivalents. 2 s.h. (w) MR. WACKERMAN

292. MICROTECHNIQUE OF WOODY TISSUE.—Preparation of wood for microscopic study including sectioning, staining, and mounting techniques; elementary photomicrography. Prerequisite: Forestry 290 or equivalent. 2 s.h. (w) MR. HARRAR

293. WOOD PRESERVATION.—Principles, methods, and materials used in treating wood to increase its durability, service-life, and fire resistance. Prerequisites: Forestry 211-212 and 290, or equivalents. 2 s.h. (w) MR. WACKERMAN

201A. TO 293A. SPECIAL STUDIES IN FORESTRY.—Work on the same level as the foregoing Senior-Graduate courses to meet the needs of individual students. Credits and hours to be arranged. THE STAFF

FOR GRADUATES

301, 302. ADVANCED STUDIES IN FORESTRY.—Credits to be arranged. To meet individual needs of graduate students in the following branches of forestry:

A. SILVICS.—Prerequisites: Forestry 241, 243, and 244 or equivalents. MR. WOODS

B. FOREST SOILS.—Prerequisite: Forestry 261 or equivalent. MR. RALSTON

C. SILVICULTURE.—Prerequisites: Forestry 244, 245, and 246 or equivalents. MR. WOODS

D. FOREST MANAGEMENT.—Prerequisite: Forestry 281 or equivalent. MR. CHAIKEN

E. FOREST ECONOMICS.—Prerequisite: Forestry 270 or equivalent. MR. YOHO

F. PROPERTIES OF WOOD.—Prerequisites: Forestry 241, and 290 or equivalents. MESSRS. HARRAR AND SULLIVAN

G. FOREST MENSURATION.—Prerequisites: Forestry 251, and 352 or equivalents. MR. SCHUMACHER

H. FOREST ENTOMOLOGY.—Prerequisite: Forestry 230 or equivalent. MR. ANDERSON

I. FOREST UTILIZATION.—Prerequisite: Forestry 211-212 or equivalent. MR. WACKERMAN

J. DENDROLOGY.—Prerequisite: Forestry 241 or equivalent. MR. HARRAR

K. FOREST-TREE PHYSIOLOGY.—Prerequisites: plant physiology, plant ecology, and silvics. MR. KRAMER

L. FOREST PATHOLOGY.—Prerequisites: Plant physiology and Forestry 223 or equivalents. MR. JOHNSON

312. COST AND QUALITY CONTROLS IN FOREST UTILIZATION.—Principles and methods of obtaining greatest efficiency of operations and maximum product value in harvesting and processing forest products; factors governing the relation of tree size to net stumpage values; and the application of these principles and methods in the solution of actual case problems. Prerequisites: Forestry 211-212 and 270 or equivalents. 3 s.h. (w) MR. WACKERMAN

331. TOXICOLOGY OF INSECTICIDES.—Study of the physical, chemical and biological properties of materials used to destroy insects. Formulation, toxicology and insect physiology as related to insecticide action are emphasized. Prerequisites: one course in entomology; organic chemistry is recommended. 3 s.h. (w) MR. ANDERSON

332. ECOLOGY OF FOREST INSECTS.—Study of the environmental factors as they influence insect population development. Both the physical and the biotic aspects are considered on the basis of field and laboratory experimental methods. Prerequisite: Forestry 230 or equivalent. 3 s.h. (w) MR. ANDERSON

333. TAXONOMY OF FOREST INSECTS.—Principles of insect classification and nomenclature with the laboratory work concentrated on the collection, preservation and identification of both the adult and immature forms of the more important groups of forest pest species. Prerequisite: Forestry 230 or a course in general entomology. 3 s.h. (w) MR. ANDERSON

348. SEMINAR IN SILVICULTURE.—Arranged primarily to give graduates of other schools of forestry special training in the silviculture of the forests of the South. All men taking this course should also register for Forestry 368. Prerequisite: At least one course in silviculture. 1 s.h. (w) MR. WOODS

352. ANALYSIS OF FOREST MEASUREMENTS.—Empirical equations and curve fitting appropriate for construction of timber yield tables, tree volume and taper tables; significance tests and graphical solution of equations. Assignments require operation of calculating machines. Prerequisite: Forestry 251. 3 s.h. (w) MR. SCHUMACHER

357, 358. RESEARCH IN FORESTRY.—Credits to be arranged. Students who have had adequate training may do research under direction of members of the Faculty in the branches of forestry indicated under courses 301, 302 with the same prerequisites as thereunder noted. Each branch to bear the same letter designation as under courses 301 and 302. STAFF

362. FOREST SOIL PHYSICS.—Analysis of the physical properties of soil related to the growth and development of forest trees. Consideration is given to the significance of soil moisture, temperature, aeration, and structural characteristics in the analysis of forest growth relationships. Prerequisite: Forestry 261. 3 s.h. (w). Offered in alternate years with Forestry 366; offered in spring of 1960. MR. RALSTON

364. SOIL CLASSIFICATION AND MAPPING.—Classification of soils as natural bodies. Mapping of soils, land use classes and forest site classes; field study will be made of soils in either the coastal plain or mountains. Prerequisite: Forestry 261. 2 s.h. (w) MR. RALSTON

366. FOREST SOIL FERTILITY.—The relationships of soil fertility factors in the growth of forest trees. Emphasis is placed on the analysis of soil factors related to the mineral nutrition of trees. Prerequisite: Forestry 261; analytical chemistry is recommended. 3 s.h. (w) Offered in alternate years with **Forestry 362.**
MR. RALSTON

368. SOILS-SILVICULTURE-MANAGEMENT FIELD SEMINAR.—Approximately two weeks at spring camp studying soils silviculture, and forest management in the coastal plain. Prerequisites: Forestry 244, 261, and 281 or equivalents. 2 s.h.
MESSRS. CHAIKEN, RALSTON AND WOODS

378. SEMINAR IN FOREST ECONOMICS.—Examination and discussion of the application of economic concepts in forestry, the potential contribution of economic analysis to private and public forest management; current research in forest economics. Prerequisites: Forestry 270 and 379 or consent of the instructor; advanced courses in economics and economic theory are desirable. 2 s.h. (w)
MR. YOHO

379. ECONOMIC ANALYSIS IN FORESTRY.—Principles of economics of particular value to problems of resource allocation and efficiency in private forest management based on a static and dynamic firm theory approach, linear programming and activity analysis. Development of production principles applicable to forestry problems in use of land, labor and capital; resource and production combinations; production location and timing; cost structure and asset control; uncertainty and expectations. Prerequisites: Forestry 270 or consent of instructor. 3 s.h. (w) MR. YOHO

386. SEMINAR IN FOREST MANAGEMENT.—Examination and analysis of techniques employed in the management of industrial and public forests, particularly in the South; discussion of problems of large scale intensive forest management. Prerequisites: Forestry 245, 281, and 379 or equivalents. 2 s.h. (w)
MR. CHAIKEN

394. WOOD FINISHES AND FINISHING.—Preparation of wood and wood surfaces for application of finish coatings; the physical and chemical properties of finishing materials; equipment and methods of application; overlays, decals, and printing; laboratory control and qualitative evaluation of finished surfaces; finishing characteristics of various species of wood. Prerequisites: Forestry 290, 397 or equivalents; 1 year of organic chemistry also desirable. 2 s.h. (w) MR. SULLIVAN

395. BONDING OF WOOD.—Preparation of veneers and lumber for bonding; types and characteristics of modern adhesives used in the manufacture of plywood and laminates; cold and hot pressing procedures; use of electronic heating; bag molding techniques; manufacture and properties of transmuted wood; inspection and testing procedures. Prerequisite: Forestry 290 or equivalent. 3 s.h. (w)
MR. SULLIVAN

396. CHEMISTRY OF WOOD.—A study of the chemical constituents of wood including cellulose and its derivatives, lignin and the lignin-cellulose bond, the hemicelluloses, and the extractives; hydrogenation and hydrolysis of wood; cell wall chemistry. Prerequisites: Forestry 290 or equivalent, one course in college physics; organic chemistry desirable. 2 s.h. (w) MR. SULLIVAN

397. TIMBER PHYSICS.—The physical properties of wood in relation to electricity, heat, light, moisture, and sound; the mechanical properties of wood; influence of site, growth, and anatomy upon strength and quality of wood; standard timber testing procedures. Prerequisites: Forestry 290 or equivalent, one course in college physics, mathematics through calculus desirable. 2 s.h. (w) MR. SULLIVAN

398. TROPICAL WOODS.—A study of the properties of various groups of tropical woods with particular emphasis upon those used in marine construction, and for lumber, plywood and furniture. Prerequisite: Forestry 290 or equivalent. 2 s.h. (w) MR. HARRAR

399. FOREST PRODUCTS SEMINAR.—Examination and discussion of new and recent developments in the field of forest products. Prerequisites: Forestry 270, 290, 291, 293, 395, 397 or equivalents. 1 s.h. (w) STAFF

OTHER RELATED COURSES

A student in the School of Forestry, may, with the approval of the faculty of the School of Forestry and the Director of Graduate studies of the department concerned, include any of the following courses offered in the Graduate School of Arts and Sciences for which he has had adequate preparation. The student is referred to the *Bulletin* of the Graduate School of Arts and Sciences for the complete descriptive content of each course.

BOTANY

Professor P. J. Kramer, Director of Graduate Studies

	S.H.
202. Genetics	4
203. Plant Cytology	4
204. Advanced Plant Anatomy	4
216. Botanical Microtechnique	4
221. Introductory Mycology	4
252. Plant Metabolism	3
254. Plant-Water Relations	3
255. Advanced Taxonomy	4
256. Community Analysis and Classification	3
257. Principles of Plant Distribution	3
258. Physiology of Growth and Development	3
259. Environmental Measurements	3
305. Vegetation of North America	3

CHEMISTRY

Professor C. K. Bradsher, Director of Graduate Studies

	S.H.
206. Elements of Theoretical Chemistry	4
215. Advanced Inorganic Chemistry	3
216. Nuclear Chemistry	2
233. Instrumental Analysis	2
234. Chemical Instrumentation	2
251. Qualitative Organic Analysis	2 or 3
252. Advanced Organic Preparations	2
261-262. Physical Chemistry	8
303. Thermodynamics	3
304. Physical Chemistry of Reactions	3
341, 342. Advanced Organic Chemistry	8
350. Organic Reactions	2
351-352. Advanced Synthetic Organic Chemistry	2
360. Polymer Chemistry	2

CIVIL ENGINEERING

Professor R. S. Rowe, Director of Graduate Studies

	S.H.
CE 201. Theoretical and Applied Mechanics	3
CE 202. Advanced Mechanics of Materials and Experimental Stress Analysis	3
CE 231. Structural Theory and Analysis	3
CE 242. Hydraulic Engineering	3

ECONOMICS

Professor J. J. Spengler, Director of Graduate Studies

	S.H.
218. Business Cycles	3
233. State and Local Finance	3
237-238. Statistical Methods	6
240. National Income	3
243. Mathematical Economics	3
244. Introduction to Econometrics	3
256. Labor Legislation and Social Insurance	3
262. Trade Unionism and Collective Bargaining	3
265. International Trade and Finance	3
268. Competitive versus Monopolistic Enterprise	3

275-276. Advanced Industrial Accounting and Mgt. 6
300. Introductory Mathematical Economics 3
303. Economic Analysis 3
304, 305. Seminar in Money and Banking 3
311-312. History of Political Economy 6
313-314. Seminar in Economic .. .. .. Theory 6
315. Seminar in Economic Systems ... 3
316. Seminar in Economic Functions of the State 3
317. Seminar in Demographic, Populations and Resource Problems 3
319. Seminar in the Theory and the Problems of Economic Growth and Change 3
320. Seminar in Trade Cycles, Employment, and Income Theory 3
329. Federal Finance 3
330. Seminar in Public Finance 3
331. Seminar in Economic History ... 3
355. Seminar in Labor Economics ... 3
358. Seminar in Labor Market and Related Analysis 3
365. Seminar in International Trade . 3
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THE SUMMER SESSION

First term begins June 10, 1960

Second term begins July 16, 1960

Admission

THE general requirement for admission to the Summer Session is graduation from an accredited secondary school or its equivalent. Rejection of a student's application for admission to one of the University's Colleges or Schools does not preclude admission of that student to the Summer Session as a special or unclassified student.

Admission to specific courses offered in the Summer Session is governed by the student's academic status (freshman, sophomore, junior, senior, graduate, special or unclassified) and by the prerequisites of the course in question. Regulations governing admission and instruction as to procedure are given in the *Bulletin of the Summer Session*.

General Registration

CLASSES BEGINNING JUNE 11. All Summer Session students whose classes begin on June 11, Term I, who *do not* complete registration in the Summer Session Office, 119 Allen Building, on or before June 4 *must* present themselves at general registration in the new gymnasium on June 10 to register. Students will register during 30-minute periods alphabetically according to *surname* as indicated in the following table.

Time	*Registrants (Surname)*
8:30– 9:00	A–B
9:00– 9:30	C–E
9:30–10:00	F–H
10:00–10:30	I–L
10:30–11:00	Mc–N
11:00–11:30	O–P
11:30–12:00	Q–R
12:00–12:30	S–T
12:30– 1:00	U–Z

CLASSES BEGINNING JUNE 20. All Summer Session students whose classes begin on June 20, Term I, must complete registration in the Summer Session Office, 119 Allen Building, on or before June 18.

CLASSES BEGINNING JULY 18. All Summer Session students who wish to register for courses offered during Term II or for research during Term II may register in the Summer Session Office on July 6 through July 14. All students who *do not* register for second term during this period *must* register in Central Records Office, 103 Allen Building, on July 16, between 8:30 and 1 p.m.

CLASSES BEGINNING ON OTHER DATES. All Summer Session students registering for courses beginning on dates other than those specified above must complete registration in the Summer Session Office *before* the date on which their classes begin. *Registration on the day on which classes are scheduled to begin will be considered late registration.*

Financial Information, Living Accommodations, and Medical Care

Fees

The University Fee:

Covering registration, tuition, and medical care.....$21.50 per semester hour

Teachers in full-time service in Elementary and Secondary Schools..... 10.00 per semester hour

Divinity School students approved by the Dean of that school..... 10.75 per semester hour

Laboratory Fees: (These where applicable are in addition to the University Fee.)

Marine Laboratory.....$10.00 per course

(For Marine Laboratory investigators' research table fees see Marine Laboratory Bulletin.)

Fees Replacing University Fee:

Medical Mycology.....$100.00

Master's Degree Summer Session Fee:

A candidate for the Master's degree who completes in the Summer Session 15 or more semester hours required for the degree and who finishes the work in the Summer Session pays a degree fee of.....$25.00

A Master's degree candidate who is not required to pay the fee under Item 1 above, but who takes a thesis examination during the Summer Session, is required to pay a degree fee of.....$10.00

A Master's degree candidate who, in the fall or spring semesters, completes 15 or more semester hours required for the degree and who finishes the work in the Summer Session without a thesis examination is not required to pay the degree fee.

Auditing Fees (See p. 411 for definition):

1. Students registered for a full course program may audit non-laboratory courses (with the permission of the Director) at no extra charge.
2. Students carrying less than a full course program may be granted permission to audit a course or courses on payment of half the University fee per semester hour audited.....$10.75 per s.h.

Late Registration Fee:

Students who fail to register prior to the first class day of a given course will pay an extra fee of.....$ 5.00

Fee for Course Changes:

Course changes other than those required by the University will be made only on payment of an extra fee of.....$ 1.00

Fee for Make-up Final Examination.....$ 3.00

Refund of Fees:

a. When applications for withdrawal are received by the Director of the Summer Session before the close of registration on registration day, full fees will be refunded.

b. When applications for withdrawal are received by the Director of the Summer Session during the first four class days of a given term 80 per cent of the fees will be refunded.

c. When applications for withdrawal are received by the Director of the Summer Session after the fourth class day there will be no refund of fees.

Academic Regulations

Kinds of Course Enrollment

SUMMER SESSION courses may be taken for "credit" or for "non-credit" or may be "audited." A student's program may be exclusively in one of these categories, or may combine any two of them or all three. Students taking a full or partial program for "credit" may enroll as auditors or as non-credit students in any number of additional courses.

CREDIT. The Summer Session term "credit" does not mean degree credit at Duke University unless the student has been admitted as a degree candidate by one of the colleges or schools of the University. A student taking a course for credit is expected to do all the work required and to take the final examination, and he will receive a grade. G.I. Bill benefits are available only to those veterans who enroll for credit.

NON-CREDIT. "Non-credit" enrollment is available to the student who wishes the privilege of participating in class discussions, exercises, and laboratory assignments but does not wish to take the examinations either mid-term or final. A "non-credit" student may do as much of the work of the course as he desires, but he may not take the final examination and he will not receive a grade. Full fees of $21.50 per semester hour are required in "non-credit" enrollment.

AUDIT. An auditor is entitled to listen to lectures and class discussions, but he may not participate in discussions or take examinations. Students may not enroll as auditors in laboratory courses. A student carrying a full program for credit may be given permission to audit as many courses as he desires without additional fees. Students carrying less than a full program for credit may secure permission to audit but are required to pay the auditing fee of $10.75 per semester hour.

Eligibility for Course Enrollment

Courses numbered 1-49 are primarily for freshmen, or freshmen and sophomores. Courses numbered 50-99 are ordinarily for sophomores, or sophomores and juniors. Courses numbered 100-199 are designed

for juniors and seniors. Courses numbered 200-299 are planned for seniors and graduates. Courses numbered 300 up admit graduate students only. Courses numbered from 200 up are limited in enrollment to 25 students.

Credits Allowed in Summer

The Summer Session courses are of the same quality and credit value as courses in the regular semester. Credit earned in the Summer Session is in terms of semester hours. The majority of Summer Session courses carry 3 semester hours' credit and require one term in residence. A limited number of basic courses in the sciences carry 4 s.h. credit (Chemistry, Geology, Physics, Zoology). Some introductory foreign language courses are given on an intensive basis. A 3 s.h. course in these introductory language courses will constitute the student's full load for half of the term.

The Normal Course Program

The normal and maximum program for one term of the Summer Session is 6 semester hours. The 4 semester hour courses in the sciences run for four weeks and one such course constitutes a full course program. Four semester hour courses do not meet on Saturdays.

Grading

Only a student taking a course for credit will receive a grade. The grade given represents the quality of the work done in the course.

PASSED.

Undergraduate Grades	*Graduate Grades*
A—excellent	E—exceptional
B—good	G—good
C—average	S—satisfactory
D—poor but passing	

FAILED. A grade of F indicates that the student has failed the course, and in order to receive credit for the course he must repeat the work in class.

INCOMPLETE. A grade of I may be reported by the instructor if for any reason he is unable to report the final grade at the regular time. Incomplete courses must be completed before the close of the succeeding semester; otherwise the I is recorded as F, and the course must be repeated in class if the student is to receive credit for it.

Graduate Study in the Summer Session

Any student who holds an A.B. or B.S. degree and who does not intend to earn an advanced degree at Duke University but who desires graduate work for professional or other reasons should apply to the Director of the Summer Session for admission as an unclassified student. Credit earned by an unclassified student will serve all usual purposes except that it will not count toward an advanced degree at Duke University.

A student who wishes to work for an advanced degree at Duke University must apply to the Dean of the Graduate School for admission to the Graduate School of Arts and Sciences. Upon securing admission the student registers with both the Summer Session Office and the Graduate School Office during the official registration period.

So that applications for admission to the Graduate School for summer work may be given full consideration, the student should submit all required documents to the Dean of the Graduate School at least *one month* before the date of intended registration. No student may register with the Graduate School until his application has been completed and admission has been granted.

The Ph.D. and Ed.D. Degrees

Study for the Ph.D. Degree: Students who are interested in working toward a Ph.D. degree should note in detail the requirements as outlined in the *Bulletin* of the Graduate School of Arts and Sciences. Of the two years required as minimum residence, not more than one year can be earned in Summer Sessions. Full-time enrollment for one term of the Summer Session is counted as one-fifth of an academic year.

Study for the Ed.D. Degree: Students who are interested in working toward an Ed.D. degree should consult the detailed statement in the *Bulletin* of the Graduate School of Arts and Sciences. Requests for specific information regarding residence and programs for the Ed.D. degree should be sent to the Director of Graduate Studies, Department of Education.

Requirements for the Master of Arts Degree

Language Requirements: The candidate for the A.M. degree must have a reading knowledge of at least one foreign language. (The several departments reserve the right to specify which foreign languages are acceptable.) The language requirement may be satisfied in either of two ways: (1) by successfully passing an examination, officially conducted by the appropriate foreign language department at Duke University, or (2) by a transcript showing the completion of the third college year of one language or the second college year of each of two acceptable foreign languages.

Major and Minor Subjects: As a prerequisite to graduate study in his major subject, the student must have completed a *minimum* of 12 semester hours of approved college courses in that subject, and 12 additional semester hours in that subject or in related work. Since some departments have specific requirements for undergraduate preparation, the student should read carefully the special requirements listed by his major department, which are included as headnotes to the course offerings in the *Bulletin* of the Graduate School.

To complete the course requirements for the A.M. degree, the student must take 24 units of graduate courses, of which at least 12 must be in the major subject. Of the remaining 12 he must take 6 units of course work in a minor subject, leaving 6 units of course work to be taken in either the major or minor field, or in another field approved by the major department and the Dean of the Graduate School. In addition to the course work, the student must present a thesis which carries a credit of 6 units. Thus, the total credit required for the A.M. degree amounts to 30 units.

The Thesis for the Master of Arts Degree: The thesis for the A.M. degree should demonstrate the student's ability to collect, arrange, interpret or report pertinent material on his special research problem. Although a publishable document is not required, the thesis must be written in a literate style, and should exhibit the student's competence in scholarly methods and procedures.

Regulations and Procedures: Students expecting to complete all requirements for a Master's degree should file with the Graduate School Office *not less than one month* prior to first presentation of the thesis a declaration of intention to receive degree and a thesis title. Candidates completing requirements for a Master's degree without thesis should file the same official blank *one month* prior to completion of all degree requirements. Official blanks may be obtained from the Graduate Office or from the Director of Graduate Studies in the student's major department.

Four bound, typewritten copies of the thesis must be submitted, in

approved form, to the Dean of the Graduate School at least *three to five days* before the date of the thesis examination. The copies will then be distributed to the several members of the examining committee.

The Examining Committee and the Examination: After consultation with the professor who has directed the thesis work, the Director of Graduate Studies in the major department appoints an examining committee composed of the director of the thesis as chairman and two other members of the graduate faculty, one of whom should represent the minor department. The committee composition is subject to approval by the Dean of the Graduate School. The candidate appears before this committee for an examination, which lasts for about one and one-half hours. The subject matter covered in the examination is usually restricted to the thesis and to the major field.

If the candidate passes his examination, the examining committee certifies to this fact by signing the title page of the thesis. The candidate then returns the original and one carbon copy of the thesis to the Dean of the Graduate School for deposit in the University Library.

Requirements for the Master of Education Degree

Prerequisites: The degree of Master of Education is granted ordinarily only to teachers or to others engaged in educational work.

Before a student is admitted to graduate study for this degree, he should have completed, on the undergraduate level, a minimum of 18 semester hours of approved work in Education.

Requirements for the Degree: The M.Ed. degree may be earned either with or without the presentation of a thesis.

Without Thesis: The required work includes a departmental major (Elementary Education, School Administration and Supervision, or Secondary Education) of at least 12 units, and a minor of at least 6 units outside the Department of Education. The remaining 12 units are elective within the area of Education and the minor field, but require the approval of the student's major adviser and the Director of Graduate Studies.

Toward the end of his residence the student must pass a comprehensive examination on his departmental major. Permission to take such examinations must be obtained from the Director of Graduate Studies of the Department of Education, and a notice of intention must be filed with him *at least two weeks* before the announced dates of the examinations.

With Thesis: Students who elect this plan are permitted to substitute a thesis for 6 units of the required course work. The thesis subject must be approved by the professor who is to direct it,

and by the Director of Graduate Studies. Students expecting to complete all requirements for a Master of Education degree should file with the Graduate School Office *not less than one month* prior to first presentation of the thesis a declaration of intention to receive degree and a thesis title. Official blanks may be obtained from the Graduate Office or from the Director of Graduate Studies in the Department of Education.

In addition to the thesis, the student must present at least 24 units of course credit. Of these, 12 units must be taken in the student's departmental major. Six units, constituting a minor, must be taken outside of the Department of Education. The remaining 6 units are elective within the area of Education and the minor field, but require the approval of the student's major adviser and the Director of Graduate Studies.

The regulations concerning the writing and submission of the thesis, and the examination of it, are the same as those governing the thesis for the Master of Arts degree.

The Master of Arts in Teaching Degree

Prerequisites: The degree of Master of Arts in Teaching is designed for teachers already in service and for recent graduates of liberal arts colleges who wish to enter public school teaching.

A student should normally have completed a minimum of 12 semester hours in his proposed major subject and an additional 12 semester hours in that or related subjects. In the event that a student wishes to undertake a graduate major different from the undergraduate major, the prerequisites may be modified upon the recommendation of the student's committee and the approval of the Dean of the Graduate School.

Programs for the Degree: One of two programs may be arranged, in consultation with the student's committee:

A. A major in Education of 18 to 24 units and 6 to 12 units in courses outside the Department of Education.

B. A major in a department other than Education of 18 to 24 units and 6 to 12 units in Education.

In both programs a minimum of 30 units is required.

The non-education courses are to be taken in one or more subjects ordinarily taught in the secondary schools. The amount and distribution of this work will be determined by the needs of the individual student.

The Master of Arts in Teaching may be earned with or without the presentation of a thesis. If a student, in consultation with his committee, elects to present a thesis, 6 units of the total of 30 units

required will be allotted to thesis research. He will then be required to complete 24 units of course credits. The regulations concerning the writing and submission of the thesis, and the examination on it, are the same as those governing the thesis for the Master of Arts degree. Candidates for the Master of Arts in Teaching who have not had teaching experience are required to take Education 215 (or 315) and 216 in which case a minimum of 36 units is required.

The Committee: Each candidate for the degree will be assigned a committee, appointed by the Director of Graduate Studies in his major department, to plan his program of study.

This committee will consist of three members, at least one of whom will be from the Department of Education, and at least one from another department. The chairman of the committee will normally be chosen from the department of the major.

Cooperative Program in Teacher Education

Forty selected graduates of liberal arts colleges who desire to prepare for high school teaching will be admitted to a special internship program at Duke University. Supported by a grant from the Ford Foundation, this program is designed to prepare for a teaching career selected college graduates who did not qualify professionally for teacher certification as undergraduates. The Cooperative Program provides, for candidates who are chosen, graduate study in their special fields, professional courses, and carefully supervised observation and teaching experience. One who completes the program successfully can achieve within a period of fifteen months a year of teaching experience, a Master of Arts in Teaching degree and full certification as a teacher. A few half-year interns can be accepted.

Candidates will begin the program at the opening of the summer session of 1960 and complete it in August of 1961. They will spend the summer preceding and the summer following the year of teaching in residence at the University. During the school year 1960-1961 interns will be employed as regular teachers in a cooperating public school system. During this year they will receive full salary and will work under the joint supervision of the cooperating public school and the University. The program will meet training qualifications for the advanced, or graduate, teacher's certificate in most states.

The salary for the year of teaching will, in effect, constitute a substantial award to candidates selected for the program. The grant from the Ford Foundation will provide tuition for the first summer session and the fall semester. Thereafter full-year interns will benefit from Duke University's special tuition rate for teachers. Half-year interns will pay tuition as regular full time students in the Graduate

School during the second semester of the school year, but they will omit the second summer session and complete the program in June. Applicants will be considered, as are candidates for other awards, on a competitive basis. The best-qualified applicants will be chosen on the basis of undergraduate record, recommendations, and evidence of interest in becoming high school teachers. Applicants are required to arrange interviews in connection with their applications. Application forms may be secured by addressing a request to the Dean of the Graduate School not later than March 1, 1960. Details concerning the program can be obtained by writing the Director, Cooperative Program in Teacher Education, Department of Education, Duke University.

Requirements for the Master of Science Degree

Prerequisites: The degree of Master of Science is offered in the fields of Civil, Electrical, and Mechanical Engineering. As prerequisites to this degree the student must have earned a Bachelor's degree from an accredited engineering college and have completed a minimum of 12 semester hours work in the major field.

Foreign Language: There is no foreign language requirement for this degree.

Major and Minor Subjects: The work for the Master of Science degree is designed to provide a broad basic foundation in the science of civil, electrical, and mechanical engineering. The student must present acceptable marks for a minimum of 24 units of graduate courses. Of these, at least 12 units must be in the major subject. He must also take a minimum of 12 units of minor work in the Departments of Mathematics, and Physics or Chemistry. In addition to these he must present a thesis, which carries a credit of 6 units. Thus his earned credit for the degree totals a minimum of 30 units.

Regulations and Procedures: The regulations and procedures and the provisions for examination and an examining committee are the same as those for the Master of Arts degree.

Candidacy for the Master's Degree

To be considered as a candidate for a Master's degree (A.M., M.S., M.Ed., M.A.T.) the graduate student must (1) have made passing grades in all courses taken during the first period of residence (if he registers for fewer than 12 units of graduate courses during the first period of residence, he must make passing grades on the initial 12

units of graduate courses), (2) have made a grade of "G" or "E" on at least 3 units of this work, and (3) have received the approval of the major department (or in the case of the M.A.T. of the supervisory committee).

Transfer of Credits

Under certain circumstances a maximum credit of 6 semester hours may be allowed for graduate courses completed elsewhere. Approval for the transfer of credits will not be given until the student has spent one semester in residence. The acceptance of credit up to this amount will not reduce the minimum period of full-time registered residence at Duke University. In no case will credit be allowed for extension or correspondence courses.

With the approval of both the student's major department and the Dean of the Graduate School, a student who is granted such transfer for credit may be permitted to register for as much as 12 units for thesis research instead of the usual 6 units. Or he may be permitted to fill out his schedule with as much as 6 semester hours of further undergraduate training or 6 semester hours of required language courses on the undergraduate level.

Time Limits for Completion of the Master's Degree

The candidate for a Master's degree who is in residence for consecutive academic years should complete all requirements for the degree within two calendar years from the date of his first registration in the Graduate School. Any candidate must complete all requirements within six calendar years of his first registration.

Courses of Instruction

Minimum Enrollment Required for Courses

ALL courses are offered subject to minimum enrollments. The University reserves the right to withdraw undergraduate courses in which fewer than twelve students enroll, senior-graduate courses numbered 200-299 in which fewer than ten students enroll, and graduate courses and seminars numbered 300 or above in which fewer than six students enroli. In withdrawing a course, the University attempts to avoid undue hardships on students. Sometimes, therefore, courses are offered in spite of small enrollments. Courses not listed will be given when a demand develops and an instructor is available.

Department Officers and Regulations

Departments offering Summer Session programs are listed alphabetically. Under each department is given the name of the chairman and the name of the director of graduate studies. Where departments have set up special regulations for admission to candidacy for the Master's degree, these are included.

Bbotany

PROFESSOR HENRY J. OOSTING, CHAIRMAN—102 BIOLOGY BUILDING (WEST CAMPUS); PROFESSOR PAUL J. KRAMER, DIRECTOR OF GRADUATE STUDIES—04 BIOLOGY BUILDING (WEST CAMPUS)

Students admitted to candidacy for an advanced degree in Botany should have completed a minimum of 12 semester hours of courses in botany (or biology) beyond an elementary course, and related work in biological sciences. Students who have not yet had the minimum hours, however, may enter higher courses by permission of the instructor, if he is convinced that they can carry the work for undergraduate credit, and may count such work toward hours necessary for candidacy.

FIRST TERM

208. BOTANY FOR TEACHERS.—This course will provide teachers of all grades with outdoor and indoor experience in using plants and plant materials. Field work will stress the recognition of plants in their native habitats and the collecting of material for classroom use. The lecture and laboratory will emphasize designing simple demonstrations, experiments, and exhibits to illustrate the fundamental botanical principles of growth, water and food relations, structure, reproduction, and heredity. Teachers may collect and preserve materials for use in their schools. (Prerequisite: one year of a natural science.) 8:00-12:00; 2:00-4:00. June 10-June 27. 3 s.h. MISS KEEVER

225. SPECIAL PROBLEMS.—Hours to be arranged. STAFF

359. RESEARCH.—Hours to be arranged. STAFF

FIRST TERM (Marine Laboratory, Beaufort, North Carolina)

211. MARINE ALGAE.—Classification, taxonomy, morphology, distribution, ecology, and economic uses of marine algae; preparation of herbarium material. In addition to collection, field work will provide students an opportunity to observe associations of marine algae *in situ* by means of diving equipment, if they wish to use it. 6 s.h. MR. HUMM

225. SPECIAL PROBLEMS.—Hours to be arranged. MR. JOHNSON

359. RESEARCH.—Hours to be arranged. MR. JOHNSON

SECOND TERM

225. SPECIAL PROBLEMS.—Hours to be arranged. STAFF

359. RESEARCH.—Hours to be arranged. STAFF

SECOND TERM (Duke Marine Laboratory, Beaufort, North Carolina)

225. SPECIAL PROBLEMS.—Hours to be arranged. MR. JOHNSON

359. RESEARCH.—Hours to be arranged. MR. JOHNSON

CHEMISTRY

PROFESSOR J. H. SAYLOR, CHAIRMAN—115 CHEMISTRY BUILDING (WEST CAMPUS); PROFESSOR CHARLES K. BRADSHER, DIRECTOR OF GRADUATE STUDIES—124 CHEMISTRY BUILDING (WEST CAMPUS)

All classes in Chemistry, Term I, will begin on June 20 and continue through July 15. All classes in Chemistry, Term II, will begin on July 18 and continue through August 12. Students who wish to avoid paying a late registration fee must have their registration completed in advance of these dates. For registration dates see *General Registration* on page 408 of this *Bulletin*.

FIRST TERM

1. GENERAL INORGANIC CHEMISTRY.—Lectures, recitations, and laboratory work on the elementary principles of chemistry and on the occurrence, preparation, properties, and uses of the elements and their compounds. Recitation daily, 8:00-9:00; laboratory daily, 9:00-12:00; lecture daily, 12:00-1:00. 4 s.h. MR. BONK

61. FUNDAMENTALS OF ANALYTICAL CHEMISTRY.—A study of the relations of electrolytes in solution and of chemical equilibrium illustrated by laboratory experiments involving the techniques of gravimetric, volumetric, and colorimetric analysis. Prerequisites: Chemistry 1-2 and Mathematics 6 or equivalent. Lecture or recitation daily, 8:30-10:00; laboratory daily, 10:30-12:30 and 1:30-4:00. 4 s.h. MR. SAYLOR

151. ORGANIC CHEMISTRY.—An introduction to the study of carbon compounds. Compounds of the aliphatic series form the basis of lectures, discussions and laboratory experiments. Prerequisite: Chemistry 61. Recitation daily, 8:00-9:00; laboratory daily, 9:00-12:00; lecture daily, 12:00-1:00. 4 s.h. MISS BROWN

275. THESIS RESEARCH.—Research in the fields of physical, analytical, inorganic, or organic chemistry. Open to those students whose research programs for the A.M. and Ph.D. degrees have been approved by the department and by one of the instructors in charge of the course. Schedule to be arranged. (Not more than one semester hour of credit per week for full-time schedule or one semester hour each two weeks for half-time schedule.) 2 to 8 s.h. Available Term I and II. STAFF

SECOND TERM

2. GENERAL INORGANIC CHEMISTRY.—A continuation of 1. Prerequisite: Chemistry 1. Recitation daily, 8:00-9:00; laboratory daily, 9:00-12:00; lecture daily, 12:00-1:00. 4 s.h. MR. HILL

152. ORGANIC CHEMISTRY.—A study of compounds of the aromatic series and of carbohydrates and proteins. Prerequisite: Chemistry 151. Recitation daily, 8:00-9:00; laboratory daily, 9:00-12:00; lecture daily, 12:00-1:00. 4 s.h. MR. QUIN

COMPARATIVE LITERATURE

FIRST TERM

203. REALISM AND SYMBOLISM.—Comparative studies in the literatures of England, France, Germany, Russia, The Scandinavian countries, Spain and Italy, tracing the decline of romantic individualism and the reappraisal of Man's significance against the social background. 9:20-10:40. 3 s.h. MR. SALINGER

ECONOMICS

PROFESSOR FRANK DE VYVER, CHAIRMAN—203E, SOCIAL SCIENCE BUILDING (WEST CAMPUS); PROFESSOR C. E. LANDON, DIRECTOR OF UNDERGRADUATE STUDIES—203 SOCIAL SCIENCE BUILDING (WEST CAMPUS); PROFESSOR J. J. SPENGLER, ACTING DIRECTOR OF GRADUATE STUDIES—322 LIBRARY (WEST CAMPUS)

FIRST TERM

51. PRINCIPLES OF ECONOMICS.—A course in the essential principles of economic science. (Credit for Ec 51 will not be given until Ec. 52 has been completed.) 9:20-10:40. 3 s.h. MR. YOHE

57. PRINCIPLES OF ACCOUNTING.—Elementary principles of single proprietorship, partnership, and corporation accounting. June 11-June 27. 7:40-12:20. 3 s.h. MR. BLACKBURN

58. PRINCIPLES OF ACCOUNTING.—A continuation of Economics 57. June 28-July 15. 3 s.h. MR. BLACKBURN

138. BUSINESS STATISTICS.—A survey of the principal statistical methods and their application to economic and business administration. The course deals with collection of statistical data, construction of statistical tables and charts, and a brief study of the fundamental statistical concepts and techniques. 9:20-10:40 3 s.h. MR. FOLSOM

153. MONEY, CREDIT AND BANKING.—This course begins with a study of the nature, characteristics, and functions of money, credit, and the commercial banking system. It covers also the history of commercial banking in the United States; the foundation, organization, and functions of the Federal Reserve System; the supervision and control of commercial banks; deposit insurance; and the value of money. 7:40-9:00. 3 s.h. MR. YOHE

168. MARKETING.—The topics covered in this course include the economic importance of markets and the marketing system; marketing functions; organization, and methods, price policies; finance; speculation; market research and planning for improvement; and regulation. 11:00-12:20. 3 s.h. MR. FOLSOM

171. ADVANCED ACCOUNTING.—Advanced accounting theory and practice applied to the managerial problems of valuation and operation in corporations, consolidations, mergers, and liquidations. Open to students who have completed Accounting 57-58. June 11-June 27. 7:40-12:20. 3 s.h. MR. KELLER

172. ADVANCED ACCOUNTING.—A continuation of Economics 171. June 28-July 15. 7:40-12:20. 3 s.h. MR. KELLER

318X. THESIS SEMINAR.—Hours to be arranged. MR. YOHE

SECOND TERM

52. PRINCIPLES OF ECONOMICS.—A continuation of Economics 51. 9:20-10:40. 3 s.h. MR. DEWEY

105. INDUSTRIAL MANAGEMENT.—This course deals primarily with the elements and problems of managing the operations of an industrial firm. Topics treated include the functions and responsibilities of management, qualities required in executives, organization, location, the physical plant, materials control, the planning and control of operations, industrial and market research, personnel, budgeting, purchasing, and records and reports. 7:40-9:00. 3 s.h. MR. HAHN

161. EUROPEAN ECONOMIC PROBLEMS.—This course deals with the losses and economic dislocations of the war, the problem of developing a new pattern of intra-European and world trade, the effort to stabilize prices and to establish a Common Market and proposed Free Trade Area. 7:40-9:00. 3 s.h. MR. GERHARD

188. PERSONNEL MANAGEMENT.—A study of the fundamental principles and problems of labor management and of collective bargaining under modern industrial conditions and under existing labor legislation. 9:20-10:40. 3 s.h. MISS ROBERTSON

189. BUSINESS AND GOVERNMENT.—An examination of the public policies which most directly affect the operation of competition in the business world. The course considers the leading philosophies of public control and economic development, the validity of their presuppositions, and their influence on legislation, court decisions, and administrative law. 11:00-12:20. 3 s.h. MR. DEWEY

318X. THESIS SEMINAR.—Hours to be arranged. MR. DEWEY

EDUCATION

PROFESSOR WILLIAM H. CARTWRIGHT, CHAIRMAN—08D WEST DUKE BUILDING (EAST CAMPUS); PROFESSOR EDWARD C. BOLMEIER, DIRECTOR OF GRADUATE STUDIES—08B WEST DUKE BUILDING (EAST CAMPUS)

For admission to candidacy for the Master of Arts (A.M.) degree with major in Education, or for the Master of Education (M.Ed.) degree, students must, in addition to meeting the general requirements for admission to the Graduate School, meet the following specific requirements: Credit for (1) eighteen semester hours of acceptable prior work in Education and (2) twelve semester hours of acceptable prior work in a minor field. If Psychology, Sociology, Economics, or Political Science is chosen for the minor, six semester hours of work completed after entering the Junior year in college will be accepted.

The degree of Master of Arts is available in the divisions of School Administration and Supervision, Secondary Education, Elementary Education, and Guidance and Counseling. Every candidate for the Master of Arts degree in the Department should elect at least twelve semester hours in one of these divisions in which he plans to write his thesis and the remainder of his work, including the six semester hours in his minor, with the approval of the proper division adviser. The degree of Master of Education is available in the divisions of School Administration and Supervision, Secondary Education, and Elementary Education. Mr. Bolmeier, Mr. Hurlburt, and Mr. Stumpf are advisers to students in School Administration and Supervision; Mr. Carr, Mr. Petty, and Miss Rudisill are advisers in Elementary Education; Mr. Bolmeier, Mr. Cartwright, and Mr. Dunning are advisers in Secondary Education; and Mr. Colver, Mr. Gehman, and Mr. Weitz are advisers in Guidance and Counseling. Mr. Cartwright, Mr. Dunning, and Mr. Hurlburt are advisers for the Master of Arts in Teaching program. Candidates for the Master of Arts, Master of Education, or Master of Arts in Teaching degree should read with special care the regulations of the Graduate School as set forth on pages 32-39. Candidates for the Master of Arts in the field of guidance should consult the special brochure on guidance available from the Dean of the Graduate School.

It is the intention of the Department to make available to degree candidates all courses ordinarily required for certification as graduate teachers, counselors, principals, and superintendents. These courses will normally be offered at least once every three years.

FIRST TERM

118. EDUCATIONAL PSYCHOLOGY.—A study of psychology of learning; individual and social development; and psychology of adjustment, as related to problems of instruction and the processes of education. 7:40-9:00. 3 s.h. MR. PALACIOS

201. TEACHING AND SUPERVISION OF ARITHMETIC.—This course gives special attention to the number system, the fundamental operations (with whole numbers, fractions, and decimals), percentage and measurements. The course will consider the meaning theory, methods of teaching, problem solving, evaluation,

practice and drill, and selection and gradation of arithmetical contents. The course is designed for teachers and supervisors in the elementary school. 7:40-9:00. 3 s.h.
MR. PETTY

205. CURRICULUM PROBLEMS IN SECONDARY EDUCATION.—A consideration of the aims and objectives of secondary-school subjects, emphasizing practical problems of curriculum-making in the high school. 7:20-9:00. 3 s.h.
MR. CARTWRIGHT

208. BOTANY FOR TEACHERS. (See Botany for description.)

210. INTRODUCTION TO EDUCATIONAL RESEARCH.—The general purpose of this course is to give the student an overview of research, acquaint him with the nature of research processes, and develop within him an appreciation of the essential characteristics of good research. 9:20-10:40. 3 s.h. MR. STUMPF

211. THE PROBLEM CHILD (also Psychology 211).—Study of problem behavior and adjustment in children with emphasis on the causes and treatment of conduct and neurotic disorders of the maladjusted child. Particular attention will be paid to mental hygiene principles in the handling of problem children in school and home. 11:00-12:20. 3 s.h. MRS. GEHMAN

(See also Psychology 232, PERSONALITY AND PHYSICAL HANDICAP, p. 54.)

213. ELEMENTARY-SCHOOL ORGANIZATION AND ADMINISTRATION.—This course is designed especially for principals, teachers, and other prospective members of the elementary-school staff. The scope of elementary education is considered to encompass nursery school, kindergarten, and the elementary school. Special treatment is given to the problems of internal organization and management of the elementary school and its integration with the secondary-school level. 11:00-12:20. 3 s.h. MR. STUMPF

217. THE PSYCHOLOGICAL PRINCIPLES OF EDUCATION.—An advanced study of teaching, learning, and the learner. Selected problems guiding the reading of students will be discussed in class. 11:00-12:20. 3 s.h. MR. GEHMAN

224. TEACHING THE SOCIAL STUDIES IN ELEMENTARY SCHOOLS.—This course will treat objectives, curriculum trends, methods, and materials in elementary-school social studies. Topics to receive emphasis include unit-planning, use of the textbook, the reading program, using community resources, audio-visual materials, dealing with controversial issues, teaching time and place concepts, and evaluation. Opportunity will be provided for teachers to work on their own school problems in the social studies. 9:20-10:40. 3 s.h. MR. CARTWRIGHT

235. THE NATURE, FUNCTION, AND REORGANIZATION OF THE CURRICULUM.—Selected problems guiding the reading of students. 7:40-9:00. 3 s.h.
MR. CARR

241. PRINCIPLES OF GUIDANCE.—An historical survey of the philosophies of guidance; a study of the interrelationships between instruction, administration, and guidance in education. Prerequisite: 6 hours of psychology. 7:40-9:00. 3 s.h.
MR. COLVER

243. PERSONALITY DYNAMICS.—A study of personality structure and dynamics with emphasis upon the implications for counseling and instruction. Prerequisite: 6 hours of psychology or educational psychology. 9:20-10:40. 3 s.h.
MR. GEHMAN

253. SCHOOL LAW.—The primary purpose of this course is to familiarize school administrators and teachers with the legal features of school organization and administration. Although some attention is given to constitutional and statutory provisions, the main emphasis is upon court decisions relating to education. Students are expected to select appropriate problems in school law for intensive study. 7:40-9:00. 3 s.h. MR. BOLMEIER

315. SEMINAR IN SECONDARY SCHOOL TEACHING.—Advanced-level consideration of principles, practices, and problems in secondary school instruction.

Designed particularly to accompany an internship. For students without previous internship credit, this course must be accompanied by Education 216.
315.1. 7:40-9:00. 3 s.h. MR. HURLBURT
315.2. 11:00-12:20. 3 s.h. MR. HURLBURT

SECOND TERM

202. EDUCATION AND THE SOCIAL ORDER. A cross disciplinary approach to the study of social aspects of the educational process. Significant contributions of social scientists and educators are considered. 9:20-10:40. 3 s.h. MR. WRONSKI

225. THE TEACHING OF HISTORY AND THE SOCIAL STUDIES.—Evaluation of the objectives, content, materials, and methods in the teaching of history and the social studies. 11:00-12:20. 3 s.h. MR. WRONSKI

226. TEACHING READING IN THE ELEMENTARY SCHOOL.—A study of the nature of the reading process and of principles, methods, and materials for the development of effective reading attitudes and skills as applied both to developmental and remedial programs. 7:40-9:00. 3 s.h. MISS RUDISILL

234. SECONDARY-SCHOOL ORGANIZATION AND ADMINISTRATION.—This course is designed especially for principals, teachers, and other prospective members of the secondary-school staff. The scope of secondary education is considered to encompass junior high school, regular high school, senior high, and junior college. Special treatment is given to the problems of internal organization and management. 7:40-9:00. 3 s.h. MR. BOLMEIER

237. LITERATURE FOR ADOLESCENTS.—This course offers a critical survey of literature written for, or appropriate for, junior and senior high school students. Fiction, non-fiction, biography, poetry, and drama are examined. Both adult and transition-type literature are considered. Methods of organizing the program in literature are explored. 9:20-10:40. 3 s.h. MR. DUNNING

238. REMEDIAL READING.—PRINCIPLES AND PRACTICE.—A study of the basic causes of reading disability and of principles, methods, and materials for the diagnosis and correction of specific difficulties. The course provides practice with grade school children suffering reading retardation, including testing, diagnosis, and daily remedial teaching during the six-week period. A basic course in the psychology or teaching of reading is prerequisite, or Education 226 may be taken concurrently. 11:00-12:20. 3 s.h. MISS RUDISILL

239. METHODS AND PROBLEMS OF TEACHING ENGLISH IN SECONDARY SCHOOLS.—This course will present sound methods of teaching the reading of literature and other forms of writing, language, grammar and composition. Materials will include selections found in widely adopted textbooks, numerous specimen themes for grading, and current books and articles in the field. Several short compositions and a report will be required. 7:40-9:00. 3 s.h. MR. DUNNING

258. EDUCATIONAL MEASUREMENTS.—A critical study of the principles and techniques involved in measurement in education, with opportunity for individual research. Prerequisite: twelve semester hours in the Department, including a course in educational psychology.
258.1. 9:20-10:40. 3 s.h. MR. JONES
258.2. 11:00-12:20. 3 s.h. MR. JONES

ENGINEERING

PROFESSOR WALTER J. SEELEY, DEAN OF THE COLLEGE OF ENGINEERING
135 ENGINEERING BUILDING (WEST CAMPUS)

FIRST TERM

C.E.110. PLANE SURVEYING.—Use of instruments, transit, stadia, and compass surveying; determination of meridian by observation on Polaris; differential and profile leveling; setting grade stakes; calculation of bearings, latitudes, departures and areas; methods of plotting; survey and plot or portions of campus by stadia,

and transit and tape; care and adjustment of instruments. Prerequisites: trigonometry; engineering drawing desirable. (Four weeks, eight hours a day). Instruction begins on June 11 and continues through July 9. 8:00-12:00, 1:00-5:00. 4 s.h. (See Forestry.) MR. THARP

ENGLISH

PROFESSOR ARLIN TURNER, CHAIRMAN—311 ALLEN BUILDING (WEST CAMPUS)
PROFESSOR BENJAMIN BOYCE, DIRECTOR OF GRADUATE STUDIES—
401 ALLEN BUILDING (WEST CAMPUS)

Candidates for the Master's degree in English are expected to have had at least twelve semester hours in undergraduate courses above the Sophomore level. The Department may also require additional courses if the work of the student in his first term indicates inadequate preparation.

FIRST TERM

55. REPRESENTATIVE WRITERS.—Chaucer's Prologue to *The Canterbury Tales* and at least two tales, Shakespeare's *I Henry IV, Hamlet* or *King Lear,* and one other play, John Donne's poems, Milton's *Paradise Lost* (selections) and some of the shorter poems. 9:20-10:40. 3 s.h. MR. SMITH

222. ENGLISH LITERATURE OF THE EARLY NINETEENTH CENTURY.—The British Romantic poets and prose writers, 1810-1830, with special attention to Byron, Shelley, and Keats. 9:20-10:40. 3 s.h. MR. STEVENSON

235. AMERICAN LITERATURE SINCE 1920.—Sherwood Anderson, Mencken, Lewis, Lardner, Gertrude Stein, Pound, Eliot, E. E. Cummings, Hemingway, Faulkner, and Fitzgerald are emphasized. 7:40-9:00. 3 s.h. MR. FENTON

266. RECENT TRENDS IN LITERARY CRITICISM.—A survey and analytical examination of the major trends and figures in twentieth-century American criticism. Emphasis is on Eliot, Pound, Babbitt, Santayana, Wilson, Tate, and Trilling. 9:20-10:40. 3 s.h. MR. O'CONNOR

267. MAJOR ENGLISH WRITERS OF THE TWENTIETH CENTURY.—An examination of important movements and figures from Samuel Butler to the post-World War II writers. Emphasis is on Shaw, Yeats, and Forster. 11:00-12:20. 3 s.h. MR. O'CONNOR

347. STUDIES IN VICTORIAN POETRY.—Analysis of themes, forms, and sources in the works of Tennyson, Browning, Arnold, Rossetti, Swinburne, Meredith, Hardy, and Hopkins. 11:00-12:20. 3 s.h. MR. STEVENSON

SECOND TERM

56. REPRESENTATIVE WRITERS.—Pope's *Poems* (selections), Fielding's *Joseph Andrews,* Keats's *Poems and Letters,* Arnold's *Selected Poetry and Prose,* Dickens's *Great Expectations,* Yeats's *Poems* (selections), and Shaw's *Man and Superman.* 9:20-10:40. 3 s.h. MR. BUDD

217. MILTON.—Milton's poetry and prose, with emphasis on the major poems. 9:20-10:40. 3 s.h. MR. BRYANT

233. AMERICAN LITERATURE, 1865-1920.—Selected works of representative authors: Whitman, Lanier, Mark Twain, James, Howells, Emily Dickinson, Henry Adams, and the Local Colorists. 9:20-10:40. 3 s.h. MR. GOHDES

239. SHAKESPEARE.—A study of the plays and poems. 7:40-9:00. 3 s.h. MR. BRYANT

331. EMERSON.—A study of Emerson's ideas as reflected in selected examples of his essays and poems. 11:00-12:20. 3 s.h. MR. GOHDES

FORESTRY

PROFESSOR E. S. HARRAR, DEAN OF THE SCHOOL OF FORESTRY AND DIRECTOR OF GRADUATE STUDIES—308 SOCIAL SCIENCE BUILDING (WEST CAMPUS)

Organized course work in the School of Forestry during the Summer Session is limited to plane surveying, forest surveying, and forest mensuration which are required of all students entering upon two years of study in technical forestry leading to the degree of Master of Forestry.

Qualified students may engage in thesis research in certain branches of forestry during the Summer Session with the approval of the instructor concerned and the Dean of the School of Forestry, or of the Director of Graduate Studies in the case of work taken through the Graduate School.

C.E.110. PLANE SURVEYING.—Use and adjustment of instruments; transit-tape, stadia, and plane table surveying; differential and profile leveling; calculation of bearings, latitudes, departures, and areas; accuracy and errors; celestial observations for azimuth; triangulation. Prerequisites: trigonometry; engineering drawing desirable. (Four weeks, eight hours a day.) Instruction begins on June 11 and continues through July 9. 4 s.h. MR. THARP

150. FOREST SURVEYING AND AERIAL PHOTO INTERPRETATION.—Application of plane surveying to forest problems; practice in making boundary, topographic and cover type surveys; details of land ownership and transfer, title search, and deed descriptions. The last two weeks will be spent in the study of the principles of aerial photogrammetry and photo interpretation, and may be taken separately for two hours of credit. Prerequisites: Civil Engineering 110, Plane Surveying; or equivalent. (Four weeks, eight hours a day.) July 11-August 6. 4 s.h. MR. CHAIKEN

151. FOREST MENSURATION.—Field studies in methods of measuring content and growth of trees and forest stands; practice in timber estimating, log scaling, use of mensurational instruments, and collection of basic data. (Four weeks, eight hours a day.) August 8-September 3. 4 s.h. MR. SCHUMACHER

357. RESEARCH IN FORESTRY.—Open to students whose research programs for the M.F. or D.F. degree have been approved by the Dean of the School of Forestry and the instructor responsible for directing the research and whose programs for the A.M. or Ph.D. degree have been approved by the Director of Graduate Studies and the instructor in charge. (Credits and schedule to be arranged.) June 11-August 20. 2 to 12 s.h. (Not more than one semester hour of credit per week for full time schedule or one semester hour each two weeks for half-time schedule.) (Consult courses 301-302 in Announcement of School of Forestry for letter designation of branches of forestry in which research is to be conducted.) STAFF

GEOLOGY

PROFESSOR E. WILLARD BERRY, CHAIRMAN—019 SCIENCE (EAST CAMPUS)

The class in Geology, Term I, will begin on June 20 and continue through July 15. The class in Geology, Term II will begin on July 18 and continue through August 12. Students who wish to avoid paying a late registration fee must have their registration completed in advance of these dates. For registration dates see *General Registration* on page 408 of this *Bulletin*.

FIRST TERM

51. GENERAL GEOLOGY.—This course is designed to give a general view of the surface features of the earth, their origin, structure, and materials. Illustrative materials are studied in the laboratory. Excursions may be made to neighboring points where principles of the science are studied in the field. Lectures or recitations, 8:00-11:00 daily; laboratory 2:00-5:00, Monday through Thursday. June 20-July 15. 4 s.h. MR. HERON

SECOND TERM

52. GENERAL GEOLOGY.—This course is designed to give some knowledge of the chief events of the earth's history. Excursions may be made to suitable neighboring localities. Lectures or recitations, 8:00-11:00 daily; laboratory 2:00-5:00, Monday through Thursday. July 18-August 12. 4 s.h. MR. HERON

GERMAN

PROFESSOR HERMAN SALINGER, CHAIRMAN—301C GRAY BUILDING (WEST CAMPUS)

The work in German 63 and 64 will be coordinated with listening and oral practice in the Language Laboratory which students in German classes will be privileged to attend. Attendance in the Laboratory is not compulsory but is very strongly advised by the Staff.

FIRST TERM

63. INTERMEDIATE GERMAN.—Grammar review and composition; reading of short stories, novels, and poems. Prerequisite: German 1-2, or two units of high school German. 9:20-10:40. 3 s.h. MR. ALLEN

64. INTERMEDIATE GERMAN.—Continuation of German 63. Prerequisite: German 63 which may be taken concurrently. 11:00-12:20. 3 s.h. MR. ALLEN

GRADUATE READING COURSE.—An intensive course in German to develop rapidly the ability to read technical German in several fields. For graduate students only. 9:20-10:40. No degree credit. MR. SEYMOUR

GREEK

PROFESSOR JAMES N. TRUESDALE, CHAIRMAN—123 ALLEN BUILDING (WEST CAMPUS)

FIRST TERM

121. GREEK LITERATURE: HOMER.—*Iliad and Odyssey*. The purpose of this course is to give a general survey of the life and civilization of the Greeks, especially to those who have never studied the language but wish to become acquainted with some of the choicest portions of the literature by the use of translations. The *Iliad* and the *Odyssey* are read in translation, and the excavations and discoveries at Troy and other cities of the Aegean age are discussed.

MESSRS. TRUESDALE, WOMBLE

121.1 7:40-9:00. 3 s.h.

121.2 7:40-9:00. 3 s.h.

122. GREEK LITERATURE: THE TRAGIC POETS.—The purpose of this course is similar to that of course 121. Many of the extant plays of Aeschylus, Sophocles, and Euripides are studied in English translations. 9:20-10:40. 3 s.h. MR. TRUESDALE

HEALTH AND PHYSICAL EDUCATION

E. M. CAMERON, DIRECTOR, TRINITY COLLEGE AND COLLEGE OF ENGINEERING—109 GYMNASIUM (WEST CAMPUS)

FIRST TERM

PE 182. THE ADMINISTRATION OF HEALTH AND PHYSICAL EDUCATION IN SECONDARY SCHOOLS.—Presents the everyday problems that arise in the experience of the teacher of health and physical education. Open to juniors and seniors. 11:00-12:20. 3 s.h. MR. HARRISON

PE 190. PROTECTIVE PRACTICES IN PHYSICAL EDUCATION.—Training and conditioning of athletic teams and the prevention, diagnosis, and treatment of athletic injuries. Gymnasium. 1:40-3:00. 3 s.h. MR. CHAMBERS

HISTORY

PROFESSOR JOHN R. ALDEN, CHAIRMAN—235 ALLEN BUILDING (WEST CAMPUS)
PROFESSOR HAROLD T. PARKER, DIRECTOR OF GRADUATE STUDIES—
232 ALLEN BUILDING (WEST CAMPUS)

For admission to candidacy for a Master's degree in History the student must present a total of eighteen semester hours of prior work in History, of which at least six must be in American History if he plans to take his major work in that field. Before enrolling for thesis supervision, candidates for the Master's degree are required to complete at least three semester hours of seminar work and are strongly urged to enroll for this work in the second term of their attendance in the Summer Session. (See courses numbered 300 or above.)

FIRST TERM

51. MODERN HISTORY, 1500-1851.—The central fact of the expansion of Europe underlies the content of the course. The chief themes are: the contest between liberty and authority in the modern state, changing economic theory and organization, and the problems of peace and war among the states, including the Western infiltration of Asia, Latin America, and Africa, and the rise of the United States as a world power. 7:40-9:00. 3 s.h. MR. GILLIN

91. THE DEVELOPMENT OF AMERICAN DEMOCRACY TO 1865.—This course is a study of trends vital to an understanding of the United States today. The main theme is the development of American democracy. Problems of foreign policy, the growth of capitalism, political practices, social behavior, and conflicting ideals are considered in relation to this main theme. 11:00-12:20. 3 s.h.
MR. CRAVEN

142. CHINA AND JAPAN IN MODERN TIMES.—The course examines China's recent history, beginning with the Boxer Uprising of 1900 and culminating in the Japanese invasion and the triumph of the Communists, and analyzes Japan's concurrent rise to the status of a world power. 9:20-10:40. 3 s.h. MR. GILLIN

219. THE DEVELOPMENT OF POLITICAL INSTITUTIONS IN ASIA.—Content and emphasis may vary. In the summer of 1960, it will stress Japan. 9:20-10:40. 3 s.h. MR. TAKEUCHI

220. STUDIES IN ASIAN HISTORY AND POLITICS.—This course will be conducted as a seminar with research papers by students. 1:40-3:00. 3 s.h.
MR. TAKEUCHI

246. WAR IN THE MODERN WORLD.—This course is concerned with the relations between warfare and political, economic, and social conditions from 1871 to the present. Special attention is given to British and American military policies and to an analysis of land, sea, and air warfare during the First and Second World Wars. 7:40-9:00. 3 s.h. MR. ROPP

292. LITERATURE AND SOCIETY IN TWENTIETH CENTURY FRANCE.—Such major French writers as Proust, Gide, Malraux, Sartre, and Camus are examined against the background of social, economic, and political change in France since 1900. Lectures and discussion in English; readings in French or in English. 11:00-12:20. 3 s.h. MESSRS. COLTON AND CORDLE

293. THE NORTHEAST IN AMERICAN HISTORY, 1815-1860.—A study of the impact of the Industrial Revolution on Puritan New England, Cosmpolitan New York, and Quaker Pennsylvania. Emphases will be placed on social-intellectual reactions and the growth of sectional interests and consciousness. 9:20-10:40. 3 s.h. MR. CRAVEN

301. SEMINAR IN HISTORICAL INVESTIGATION.—A course designed to introduce teachers, current and prospective, to the processes of historical research through investigation of particular instances. The topics selected for investigation vary with the needs and interests of each individual. 1:40-3:00 or at an hour to be arranged. 3 s.h. MR. COLTON

SECOND TERM

52. MODERN HISTORY, 1851-1960.—A continuation of History 51. 7:40-9:00. 3 s.h. MR. TISCHENDORF

92. THE DEVELOPMENT OF AMERICAN DEMOCRACY, 1865 TO THE PRESENT.—The emphasis is on the emergence of contemporary problems. 11:00-12:20. 3 s.h. MR. DURDEN

132. LATIN AMERICA IN THE TWENTIETH CENTURY.—Political, social, and economic history of Latin America in the twentieth century, with special reference to Argentina, Brazil, and Chile. 9:20-10:40. 3 s.h. MR. TISCHENDORF

254. THE OLD SOUTH, 1607-1865.—After a brief survey of basic institutions of the South in the colonial period, the course deals primarily with the development of the South as a self-conscious section and its changing leadership from Jefferson to Calhoun and Davis. 9:20-10:40. 3 s.h. MR. DURDEN

302. SEMINAR IN HISTORICAL INVESTIGATION.—See description of 301. 1:40-3:00 or at an hour to be arranged. MR. FERGUSON

LATIN AND ROMAN STUDIES

PROFESSOR ROBERT S. ROGERS, CHAIRMAN—204 CARR BUILDING (EAST CAMPUS)

FIRST TERM

111. ROMAN LITERATURE IN ENGLISH TRANSLATION.—Selected readings of Latin literature in English translation with emphasis on the drama, lyric poetry, and the varied contributions of Cicero to literature. 9:20-10:40. 3 s.h. MR. WOMBLE

MATHEMATICS

PROFESSOR J. J. GERGEN, CHAIRMAN—134 PHYSICS BUILDING (WEST CAMPUS); PROFESSOR J. H. ROBERTS, DIRECTOR OF GRADUATE STUDIES—230 PHYSICS BUILDING (WEST CAMPUS)

Graduate students are invited to consult with the Director of Graduate Studies concerning their programs.

FIRST TERM

5. COLLEGE ALGEBRA.—Advanced topics in quadratic equations, systems involving quadratics, variation, binomial theorem, progressions, inequalities, theory of equations, determinants, partial fractions, probability. This course and Mathematics 6 may be taken concurrently. Prerequisite: Mathematics 1, or one and one-half units in algebra and one unit in geometry. 7:40-9:00. 3 s.h. STAFF

6. PLANE TRIGONOMETRY.—Logarithms, right and oblique triangles, radian measure, graphs of trigonometric functions, inverse trigonometric functions, trigonometric identities and equations. Prerequisite: Must be preceded or accompanied by Mathematics 5. 9:20-10:40. 3 s.h. STAFF

213. MODERN ALGEBRA.—Construction of the number system. Introduction to groups, fields, rings, vector spaces, linear transformations. Prerequisite: Calculus. 7:40-9:00. 3 s.h. MR. THOMAS

259. SOLID ANALYTIC GEOMETRY.—Spatial and n-dimensional coordinate geometry. Configurations of planes and lines, quadric surfaces, algebraic curves. Prerequisite: Calculus. 9:20-10:40. 3 s.h. MR. THOMAS

389X. THESIS SEMINAR.—Supervision of individual theses in algebra, analysis and geometry. Students should consult with the Director of Graduate Studies before registering. Thesis credit only. Hours to be arranged. STAFF

SECOND TERM

50. PLANE ANALYTIC GEOMETRY.—Rectangular and polar coordinates, loci, straight lines, conic sections. This course and Mathematics 51 may be taken concurrently. Prerequisites: Mathematics 5 and 6. 7:40-9:00. 3 s.h. MR. ELLIOTT

51. CALCULUS I.—Differentiation of elementary functions, curve tracing, maxima and minima, motion, curvature, indeterminate forms. Prerequisite: Must be preceded or accompanied by Mathematics 50. 9:20-10:40. 3 s.h. MR. ELLIOTT

PHILOSOPHY

PROFESSOR CHARLES A. BAYLIS, CHAIRMAN—212 WEST DUKE BUILDING (EAST CAMPUS); ASSOCIATE PROFESSOR BERNARD PEACH, DIRECTOR OF GRADUATE STUDIES—212 WEST DUKE BUILDING (EAST CAMPUS)

FIRST TERM

49. ETHICS.—An introductory consideration of basic ethical concepts and principles as developed in European and American thought and culture. 9:20-10:40. 3 s.h. MR. BINKLEY

91. INTRODUCTION TO PHILOSOPHY.—A systematic and historical examination of the major problems of knowledge, morals, and metaphysics. 11:00-12:20. 3 s.h. MR. BINKLEY

SECOND TERM

48. LOGIC.—A study of the conditions of effective thinking and clear communication. Examination of the basic principles of deductive reasoning (making explicit the implications of statements) and of inductive reasoning (the formulation and testing of hypotheses on the basis of experience and experiment). 11:00-12:20. 3 s.h. MR. CLARK

91. INTRODUCTION TO PHILOSOPHY.—A systematic and historical examination of the major problems of knowledge, morals, and metaphysics. 9:20-10:40. 3 s.h. MR. CLARK

PHYSICS

PROFESSOR WALTER M. NIELSEN, CHAIRMAN, 119 PHYSICS BUILDING; ASSOCIATE PROFESSOR HAROLD LEWIS, DIRECTOR OF GRADUATE STUDIES—043 PHYSICS BUILDING (WEST CAMPUS)

Classes in Physics 41, Term I, will begin on June 20 and continue through July 15. Classes in Physics 42, Term II, will begin on July 18 and continue through August 12. Students who wish to avoid paying a late registration fee must have their registration completed in advance of these dates. For registration dates see *General Registration* on page 408 of this *Bulletin*.

FIRST TERM

41. GENERAL PHYSICS.—This course treats the basic principles of general physics in a more quantitative manner than Physisc 1-2. It meets in a thorough way the physics requirement for entrance into the study of either medicine or engineering, and is well suited for the general science student. This course is not open for credit for students who have completed Physics 1-2. Lecture and recitation daily, 8:30-9:50 and 10:10-11:30; laboratory four days per week, 1:00-4:00. Prerequisites: Mathematics 5-6 or equivalent. 4 s.h.

MESSRS. CARPENTER AND STEPHENSON

353X. THESIS SEMINAR.—Students who are properly qualified may carry on research work under direction. Credits and hours to be arranged. STAFF

SECOND TERM

42. GENERAL PHYSICS.—A continuation of Physics 41. Prerequisite: Physics 41. Lecture and recitation daily, 8:30-9:50 and 10:10-11:30; laboratory four days per week, 1:00-4:00. 4 s.h. MESSRS. CARPENTER AND STEPHENSON

POLITICAL SCIENCE

PROFESSOR ROBERT S. RANKIN, CHAIRMAN—308 LIBRARY (WEST CAMPUS); PROFESSOR ROBERT R. WILSON, DIRECTOR OF GRADUATE STUDIES—405 LIBRARY (WEST CAMPUS)

FIRST TERM

61. THE AMERICAN POLITICAL SYSTEM.—An analysis of the principles and institutions of the national government of the United States. 7:40-9:00. 3 s.h.
MR. LEACH

123. INTRODUCTION TO POLITICAL PHILOSOPHY.—A course devoted to the reading and discussion of selected political classics including Plato's *Republic,* Aristotle's *Ethics and Politics* and other works as time permits. 9:20-10:40. 3 s.h.
MR. LEACH

219. THE DEVELOPMENTS OF POLITICAL INSTITUTIONS IN ASIA.—Content and emphasis may vary. In the summer of 1960, it will stress Japan. 9:20-10:40. 3 s.h. MR. TAKEUCHI

220. STUDIES IN ASIAN HISTORY AND POLITICS.—This course will be conducted as a seminar with research papers by students. 1:40-3:00. 3 s.h.
MR. TAKEUCHI

SECOND TERM

62. COMPARATIVE POLITICAL SYSTEMS.—An analysis of the principles and institutions of selected foreign governments, as compared with those of the United States. 7:40-9:00. 3 s.h. MR. PROCTOR

121. ELEMENTS OF INTERNATIONAL RELATIONS.—Analysis of international politics, of the foundations of national power, and of international cooperation, with emphasis upon attempted solutions of the central problems of international security. 9:20-10:40. 3 s.h. MR. PROCTOR

PSYCHOLOGY

PROFESSOR ELIOT H. RODNICK, CHAIRMAN—101 BIVINS BUILDING (EAST CAMPUS); PROFESSOR KARL ZENER, DIRECTOR OF GRADUATE STUDIES—205 PSYCHOLOGY LABORATORY BUILDING (EAST CAMPUS)

Details concerning the program in studies in Psychology may be obtained from the Director of Graduate Studies in Psychology.

FIRST TERM

91. INTRODUCTORY PSYCHOLOGY.—An introduction to the facts, principles, and problems of normal adult psychology through a study of psychological methods as applied to motivation, emotions, perception, sensation, thinking, memory, learning, individual differences, and personality.

91.1. 7:40-9:00. 3 s.h. MR. DUNHAM

91.2. 7:40-9:00. 3 s.h. MR. KING

91.3. 9:20-10:40. 3 s.h. MR. KING

211. THE PROBLEM CHILD (Also Education 211).—Study of problem behavior and adjustment in children with emphasis on the causes and treatment of conduct and neurotic disorders of the maladjusted child. Particular attention will be paid to mental hygiene principles in the handling of problem children in school and home. 11:00-12:20. 3 s.h. MRS. GEHMAN

232. PERSONALITY AND PHYSICAL HANDICAP.—Survey of the psychological factors underlying adjustment to physical disabilities, with particular stress upon personality, emotional and social attributes. Selected case studies will be used to illustrate the integration of such factors in adjusting to home, school, and hospital settings. These cases will stress the psychological factors which hinder

learning and retraining procedures. Discussion will center about psychological techniques to produce more effective progress in rehabilitation. 7:40-9:00. 3 s.h. MR. DASTON

303. RESEARCH.—Students who are properly qualified may carry on research work under direction. Hours and credit to be arranged. STAFF

SECOND TERM

106. ABNORMAL PSYCHOLOGY.—A systematic presentation of the psychology of personality abnormalities with emphasis on its bearing upon normal personality theory. 7:40-9:00. 3 s.h. MR. BAXTER

304. RESEARCH.—Students who are properly qualified may carry on research work under direction. Hours and credit to be arranged. STAFF

RELIGION

PROFESSOR ROBERT E. CUSHMAN, DEAN OF THE DIVINITY SCHOOL—110 DIVINITY SCHOOL (WEST CAMPUS); ASSOCIATE PROFESSOR JAMES L. PRICE, CHAIRMAN OF THE DEPARTMENT OF RELIGION—107 GRAY (WEST CAMPUS); ASSOCIATE PROFESSOR D. G. BRADLEY, DIRECTOR OF UNDERGRADUATE STUDIES IN RELIGION—108 GRAY (WEST CAMPUS); PROFESSOR WALDO BEACH, DIRECTOR OF GRADUATE STUDIES IN RELIGION—308 DIVINITY SCHOOL (WEST CAMPUS)

THE DEPARTMENT OF RELIGION

FIRST TERM

51. THE ENGLISH BIBLE.—A survey of the books of the Old Testament which examines their origin in the history of the people of the Bible, and which give attention to major persons and events. Religion 51 must be followed by Religion 52 to satisfy the uniform course requirements in Religion. (For alternate sequence see Religion 55.)

51.1. 7:40-9:00. 3 s.h. MR. LANGFORD

51.2. 11:00-12:20. 3 s.h. MR. SALES

52. THE ENGLISH BIBLE.—A survey of the books of the New Testament which examines their origin in the Early Church and which gives attention to major persons and events. Religion 52 must be preceded by Religion 51 to satisfy the uniform course requirement in Religion. 9:20-10:40. 3 s.h. MR. SALES

55. THE RELIGION OF THE BIBLE.—An introduction to the historical and critical study of the Old and New Testaments which considers the principal persons, events, ideas and practices in the Bible and their significance for the present time. Religion 55 is not open to students receiving credit for Religion 1-2 or 51-52, and it must be followed by one other course selected from those numbered 60-99 to satisfy the uniform course requirement in Religion. 9:20-10:40. 3 s.h. MR. BRADLEY

140. CHRISTIAN BELIEFS (formerly Religion 192).—An introductory study of important Christian teachings concerning God, Jesus Christ, sin and salvation, etc., intended to serve as a basis for the student's evaluation of his own religious concepts. 11:00-12:20. 3 s.h. MR. LANGFORD

SECOND TERM

52. THE ENGLISH BIBLE.—For description see Term I. 7:40-9:00. 3 s.h. MR. OSBORN

55. THE RELIGION OF THE BIBLE.—For description see Term I. 9:20-10:40. 3 s.h. MR. DANIELS

85. INTRODUCTION TO CHRISTIAN ETHICS (formerly Religion 91).—A brief analysis of the Biblical and historical bases for the Christian understanding of man's moral situation, followed by a study of the social implications of Christianity in such areas of life as marriage, race, the political and economic order, etc. Consideration is given to the relation of Christian ethics to moral philosophy. Prerequisite: Religion 55. 9:20-10:40. 3 s.h. MR. OSBORN

121. THE MISSION AND MESSAGE OF JESUS. (formerly Religion 116).—An analysis and interpretation of the Gospels, designed to afford the student a fuller understanding of Jesus and his mission. Not open to students who have received credit for Religion 65. 11:00-12:20. 3 s.h. MR. DANIELS

THE DIVINITY SCHOOL

Class enrollments will be controlled as occasion may arise so as to secure a fairly even distribution among the courses offered in each term.

FIRST TERM

21 (DS). THE THEOLOGY OF THE PROTESTANT REFORMATION.—The Reformation of the 16th century and its outcome in the 17th and 18th centuries. 7:40-9:00. 3 s.h. MR. GRISLIS

28 (DS). HISTORY OF AMERICAN CHRISTIANITY.—A consideration of the nature of Christianity in America and the history of its development. 7:40-9:00. 3 s.h. MR. HENRY

116 (DS). LIVING ISSUES OF NEW TESTAMENT THEOLOGY.—Examination of recent major questions of debate in the New Testament field. 11:00-12:20. 3 s.h. MR. ANDERSON

195 (DS). ORIGINS OF DOGMATIC THOUGHT.—An analysis of dogmatic concepts in the Gospel of John: their development into a body of doctrine. 9:20-10:40. 3 s.h. MR. HERZOG

SECOND TERM

32 (DS). CONTEMPORARY WESTERN CULTURE.—An analysis of the conceptual commitments in contemporary styles of thought and life as reflected in the natural sciences, philosophy, social analysis, and the arts. 9:20-10:40. 3 s.h. MR. POTEAT

111 (DS). THE CHURCH AND RACE.—An examination of the biological and social meaning of race, the dynamics of race relations and the Church's responsibility in the area of contemporary life. 7:40-9:00. 3 s.h. MR. RANSON

192 (DS). CHRISTIANITY AND INTERNATIONAL RELATIONS.—An application of Christian Ethics to world problems. 7:40-9:00. 3 s.h. MR. LACY

224 (DS). CONCEPTIONS OF MAN IN WESTERN THOUGHT.—An analysis and interpretation of important types of philosophical and theological theory. 11:00-12:20. 3 s.h. MR. RICHEY

ROMANCE LANGUAGES

PROFESSOR GIFFORD DAVIS, CHAIRMAN—214 CARR BUILDING (EAST CAMPUS);
PROFESSOR R. L. PREDMORE, DIRECTOR OF GRADUATE STUDIES—
201 CARR BUILDING (EAST CAMPUS)

The Audio Laboratory will be available to French and Spanish students in Courses 1-2, 63-64 for supplementary exercises in the spoken language. All auditions will be synchronized with the daily textbook assignments.

FRENCH

FIRST TERM

1. ELEMENTARY FRENCH.—Introduction to simple conversational patterns, elements of grammar, graded readings. 7:40-9:00. 3 s.h. MR. BUSH

63. INTERMEDIATE FRENCH.—The progressive development of skills in speaking, understanding, and reading. Prerequisite: French 1-2 or two years of high school French. 11:00-12:20. 3 s.h. MR. HARDEE

91. INTRODUCTION TO FRENCH LITERATURE.—Development of skill in rapid reading correlated with discussion in French of content and ideas. 7:40-9:00. 3 s.h. MR. WALTON

92. INTRODUCTION TO FRENCH LITERATURE.—Continuation of French 91, with main emphasis on authors of the nineteenth and twentieth centuries. May be taken concurrently with 91. 11:00-12:20. 3 s.h. MR. SANDBERG

292. LITERATURE AND SOCIETY IN TWENTIETH CENTURY FRANCE.—Such major French writers as Proust, Gide, Malraux, Sartre, and Camus are examined against the background of social, economic, and political change in France since 1900. Lectures and discussion in English; readings in French or in English. 11:00-12:20. 3 s.h. MESSRS. COLTON AND CORDLE

SECOND TERM

2. ELEMENTARY FRENCH.—Continuation of 1. 7:40-9:00. 3 s.h. MR. RIPLEY

64. INTERMEDIATE FRENCH.—Continuation of 63 with more extensive reading. 11:00-12:20. 3 s.h. MR. CHERPACK

SPANISH

FIRST TERM

1. ELEMENTARY SPANISH.—Introduction to simple conversational patterns, elements of grammar, graded readings. 11:00-12:20. 3 s.h. MISS KRUMMEL

63. INTERMEDIATE SPANISH.—The progressive development of the skills in speaking, understanding, and reading. Prerequisite: Spanish 1-2 or two years of high school Spanish. 7:40-9:00. 3 s.h. MR. FLINT

91. INTRODUCTION TO SPANISH LITERATURE.—Readings from representative Spanish authors. Development of skill in rapid reading correlated with discussion in Spanish of content and ideas. 7:40-9:00. 3 s.h. MR. PREDMORE

92. INTRODUCTION TO SPANISH LITERATURE.—Continuation of 91. May be taken concurrently with 91. 11:00-12:20. 3 s.h. MR. TORRE

SECOND TERM

2. ELEMENTARY SPANISH.—Continuation of 1. 11:00-12:20. 3 s.h. MR. MILLER

64. INTERMEDIATE SPANISH.—Continuation of 63 with more extensive reading. 7:40-9:00. 3 s.h. MR. MILLER

SOCIOLOGY

PROFESSOR JOHN C. MCKINNEY, CHAIRMAN—215D SOCIAL SCIENCE BUILDING (WEST CAMPUS); PROFESSOR ALAN C. KERCKHOFF, DIRECTOR OF GRADUATE STUDIES—215E SOCIAL SCIENCE BUILDING (WEST CAMPUS)

The Department of Sociology offers graduate work leading to the A.M. and Ph.D. degrees. Before undertaking advanced work in this department, a student must have completed a minimum of twelve semester hours of approved preliminary

courses in the field, and twelve additional semester hours in the field or in related work. A student who is deficient in the minimum required work will be asked to take additional undergraduate courses agreed upon in conference with the Director of Graduate Studies.

Candidates for advanced degrees in Sociology usually take minor work in Psychology, Economics, Political Science, Education, History, or Religion. Detailed requirements for the minor work, and for majors in other departments who wish to present Sociology as minor work, may be obtained from the Director of Graduate Studies.

FIRST TERM

91. GENERAL SOCIOLOGY.—An introduction to the scientific study of social life, its origin, evolution, and organization as illustrated by the study of a number of concrete social problems. Credit is given only upon completion of Sociology 92. 11:00-12:20. 3 s.h. MR. VANDER ZANDEN

150. THE FAMILY.—Analysis of the American family as an institutionalized group and its relationship with other institutions and structural features such as social class and ethnic group. Special attention is devoted to methods of research in this area. 9:20-10:40. 3 s.h. MR. VANDER ZANDEN

242. THE SOCIOLOGY OF OCCUPATIONS AND PROFESSIONS.—The social significance of work. Analysis of forces changing the contemporary occupational structure, typical career patterns of professions and occupations, the social organization of the occupational groups. 9:20-10:40. 3 s.h. MR. PELLEGRIN

247. COMMUNITY AND SOCIETY.—This course seeks to provide a frame of reference for the analysis and ordering of facts pertaining to the diverse cultures of the world, the State, the world community, the Great Society, news, mass behavior, social problems, races and classes. 11:00-12:20. 3 s.h. MR. PELLEGRIN

SECOND TERM

92. GENERAL SOCIOLOGY.—An Introduction to the scientific study of social life, its origin, evolution, and organization as illustrated by the study of a number of concrete social problems. Prerequisite: Course 91. 11:00-12:20. 3 s.h. MR. ROY

241. SOCIAL STRATIFICATION.—The nature of hierarchical and vertical differentiation in the economic, political and prestige structures in modern societies. The interrelationship of class, status and power strata and their influence on social institutions, personality structure, and group and individual behavior. 9:20-10:40. 3 s.h. MR. ROY

ZOOLOGY

PROFESSOR KARL M. WILBUR, CHAIRMAN—224 BIOLOGY BUILDING (WEST CAMPUS); PROFESSOR EDWARD HORN, ACTING DIRECTOR OF GRADUATE STUDIES—06 BIOLOGY BUILDING (WEST CAMPUS)

All classes in Zoology are offered at the Duke University Marine Laboratory at Beaufort, North Carolina (Term I, June 10-July 15; Term II, July 16-August 20). Students who wish to avoid paying a late registration fee must have their registration completed in advance of these dates.

For admission to candidacy for a master's degree in Zoology, a student should have completed an undergraduate major in Zoology (courses in General Science and Botany are not counted as a part of a Zoology major). This normally amounts to about twenty-four semester hours, which should be distributed among various fields of Zoology, and must include Vertebrate Zoology or Comparative Anatomy, Physiology, and Embryology, passed with creditable grades. A candidate should also have completed at least one year of Chemistry. Work for the degree will require eighteen hours in advanced courses in Zoology, and six hours in another department for a

minor, in addition to a thesis. Before registration for a degree, students should confer with the Director of Graduate Studies for the Department. Students not candidates for a degree may take courses offered if they have necessary prerequisites but may not count them toward a degree until an undergraduate major has been completed.

FIRST TERM (Duke Campus)

353. RESEARCH.—Hours to be arranged. 2-6 s.h. STAFF

FIRST TERM (Duke Marine Laboratory)

203. MARINE ECOLOGY.—A study of marine animals in relation to environment. Consideration of environmental factors, succession, rhythms, communities, intraspecific and interspecific relations, productivity, conservation problems, etc., concerned with animal life in the ocean. Lectures, reviews, conferences, field and laboratory work. 6 s.h. MR. GRAY

353. RESEARCH.—Hours to be arranged. 2-6 s.h. STAFF

SECOND TERM (Duke Campus)

353. RESEARCH.—Hours to be arranged. 2-6 s.h. STAFF

SECOND TERM (Duke Marine Laboratory)

250. PHYSIOLOGICAL ECOLOGY OF MARINE ANIMALS.—A study of the physiological responses of marine animals in relation to certain environmental factors and evolution. Animals representing numerous phyla and from various habitats are studied. Prerequisite: Zoology 151 or equivalent. 6 s.h. MR. VERNBERG

274. MARINE INVERTEBRATE ZOOLOGY.—A study of invertebrate animals that occur in the Beaufort region. A number of field trips will be made to a variety of habitats to study, collect, and classify animals in their natural environment. The structure and habits of living invertebrates, as well as their behavior under certain experimental conditions, will be studied in the laboratory. 6 s.h. MR. BOOKHOUT

353. RESEARCH.—Hours to be arranged. 2-6 s.h. STAFF

Alumni Organizations

GENERAL ALUMNI ASSOCIATION: The Alumni Association of Duke University is composed of the former students of Duke University and its predecessor, Trinity College. The Association gives its annual dinner at Commencement, at which time the annual business meeting of the Association is held.

GENERAL ALUMNAE ASSOCIATION: The Alumnae Association of Duke University is composed of the women graduates and former students of Duke University and its predecessor, Trinity College. The Association joins with the Alumni Association in the annual dinner at Commencement. The annual business meeting is held on Alumnae Day.

DUKE UNIVERSITY NATIONAL COUNCIL: The Duke University National Council is a working body for the alumni interests and maintains a constant supervision of alumni activities. It devotes its activities and efforts to advancing the welfare of Duke University by all appropriate means. Two meetings are held each year, one at Commencement and the other in the fall. The Council is composed of representatives from the various classes, local associations, students, faculty, parents, representatives at large, honorary members, officers of the General Alumni and Alumnae Associations, and representatives from the alumni and alumnae organizations of the professional schools.

ALUMNAE COUNCIL:The Alumnae Council was established by the General Alumnae Association in 1925. As the working organization of the group which established it, the Council endeavors to bind more closely the alumnae and the University and to advance the interests and aims of Duke University.

THE ALUMNI OFFICE: The General Alumni Office was organized to promote the work of the local alumni and alumnae associations and to co-ordinate the various activities of the General Alumni and Alumnae Associations and the Duke University National Council and Alumnae Council. One hundred local and professional alumni associations have been formed throughout the United States.

THE ALUMNI REGISTER OF DUKE UNIVERSITY: *The Alumni Register* of Duke University is a magazine published ten months of the year by the Alumni Association in the interest of the alumni and the University. It aims to keep the alumni in touch with one another and with the University.

THE ALUMNI NEWS: *The Duke University Alumni News* is sent to all alumni four times during the year.

Bureau of Public Information

The Bureau of Public Information is the official news agency of the University in the Division of Public Relations, and all University news emanates from this office. The Bureau maintains the University's relationship with the press and other communications media, and interprets the University—its faculty, its research and achievement —to the public via these media.

The Bureau also maintains individual biographical files on all faculty members and students, as well as files on all University departments and activities. Its files of clippings form a rich source of historical information of the Institution's life. In addition, the Bureau is a source of information for the many inquiries about Duke University which are received daily from all sections of the nation and from abroad.

Gifts and Bequests

DUKE University derives its principal support from endowment funds and from miscellaneous gifts and grants. Permanently invested capital funds enable the University to offer to students academic and professional training at a fraction of its actual cost. The effectiveness of the University is determined to a large extent by its financial resources.

Gifts and bequests devoted to the improvement of the work of the University will be received and administered by the trustees in accordance with the desires of the donor.

GIFTS. Any kind of property, real or personal, may be the subject of a gift and only such form as is required to pass title is necessary. If the gift consists of real property, the title will be passed by deed; if it consists of cash or unregistered bonds, the gift is consummated by delivery of the property; or if stocks, by delivery of properly endorsed stock certificates. Unless restricted, the use of gifts is at the

discretion of the Board of Trustees. Usually the proceeds, conservatively invested, are added to the permanent endowment of the University. The donor may, however, restrict the use of any gift and designate definitely the objects for which it shall be used. In such cases, the transfer of property would be accomplished by a letter or other documents describing in detail the objects for which the proceeds of the gift are to be used and when accepted by the University the term or conditions set out therein become binding upon it.

BEQUESTS. Bequests may be made to the University by an appropriate clause inserted in a will by codicil to a will already drawn. The following forms will serve as appropriate clauses for wills or codicils:

GENERAL

I give (devise: if real property) and bequeath to Duke University, a corporation existing under the laws of the State of North Carolina and located in the City and County of Durham, State of North Carolina, and its successors forever,

the sum of.....dollars (or otherwise describe the gift) for the general purposes and uses of the University at the discretion of the Board of Trustees.

SPECIFIC

I give (devise; if real property) and bequeath to Duke University, a corporation existing under the laws of the State of North Carolina and located in the City and County of Durham, State of North Carolina, or its successors forever,

the sum of.....dollars (or otherwise describe gift) and direct that the income therefrom shall be used for the following purposes, viz. (here describe the use desired).

CODICIL

Having hereinbefore made my last Will and Testament dated.....

....., and being of sound mind, I hereby make, publish, and declare the following codicil thereto; (here insert clause in same form as if it had been included in body of Will). Except as hereinbefore change, I hereby ratify, confirm and republish my said last Will and Testament.

Degrees and Honors

The following degrees were awarded June 6, 1960:

A.B. DEGREE

Joel Terry Abraham
Dolph Oliver Adams
William Walker Alexander, Jr.
Esther Reece Alfriend
Rae Fruth Allen
Farris Furman Anderson, III
Richard Parker Anderson
Robert Doyle Anderson
Alice Minott Andes
Frederick Franck Andrews
Neill Preston Andrews
Carol Louise Anspach
Martha Lam Ashley
Claire Stewart Atkins
Jean Morrill Attwood
Charles Brantley Aycock
Arthur Eugene Balderacchi
Robert Charles Barrier
Jay Grant Barton
Zeren Ayse Barutcuoglu
Thomas Langston Bass
Ila Kathryn Batten
Kathleen Mary Baxter
John Nichols Beard
Floyd Alexander Bell, Jr.
Deborah Boyles Berney
Barbara Brewton Berry
John Franklin Bigger, Jr.
Ohlyne Blackard
Alexander M. Blackburn, III
Linda Lee Blackerby
Florence Nelson Blount
Linda Jane Boliek
Emily Grace Boling
Margaret Ann Booker
Walter Eugene Boomer
Ann Elizabeth Boone
Bonnie Lee Bose
Ronald Edward Bostian
Sally Bates Bovard
Thaddeus Ray Bowers, III
William Waring Boys
Daniel Guilford Bracey
Lena Margaret Bradley
Thorston Tideman Bradsher
Jerry Lee Brammer
Bettie Grier Brinkley
Harry Greer Britt
Helen Grosvenor Broadfoot
Irwin Lukens Brooks
Marshall Heindel Brooks
James Robert Brown
Birt Lee Browning, Jr.
Peter Martin Buckley
Carol Lillian Buder
Janice Ruth Buell
Barbara Gretchen Buening
Samuel David Bundy, Jr.
Susan Gail Burdick
Mary Angela Butt
Gail Boothroyd Buttry
Ann White Caldwell
Elizabeth Boyd Caldwell
Julie Lynne Campbell
William Lowell Campbell
Jean Lee Cantey
John Joseph Cappello
Billy McCoy Carden
Robert H. Carlyn
Charles Bernard Carter, Jr.
Robert Edward Carter
Eleanor Wrae Cartwright
John M. Cartwright
Héctor José Cases
Stephen Huntley Casey
Jane Elliott Chaney
Arnold Robert Cherin
Malcolm Emery Church
Nicholas Emmanuel Claditis
Adri Marijke Clark
Catherine Bourdon Clark
Ruth Elizabeth Clark
Gerald Templeton Cloniger
Barry Marvin Cohen
Edgar Allan Cohen, Jr.
Richard Louis Cohen
Mary Pearson Collom
John Cecil Conner
Earl Leonard Copeland
Carol Anne Corder
Thomas Brott Coulter
Patricia Ann Cox
Frances Georgina Cranston
Robert Cecil Crawford, Jr.
Charles Anthony Crocco, Jr.
Jon Christopher Crocker
Kevin Frederick Cunningham
Jerry Lee Danford
Alfred Kenneth Darling
Lee Frances Day
Roberta Lea Dees
Mary Elizabeth DeLegal
Donald Ralph Denne
John Jeffrey Derecki
George Dewey, Jr.
James McIntosh Dickson
Larry Mason Dobbs
Wendy Durand Dobson
William Ernest Doney
Lillian Ennis Dotson
Stuart Edward Dow
William King Drummond
Mary Joann Woltz Duffield
Patricia Anne Dunigan
Marcia Sue Dunning
Joan Marie Durstine
Carolyn Elizabeth Dyer
Nanci-Ames Early
George Theodore Eaton
Stanley Boyd Eaton, Jr.
Arthur Jackson Speer Eberdt
Sandra Moore Edgerton
James Allen Edwards, Jr.
Robert Earl Edwards
Judith Ellis
Louise Ford Ellis
Edward C. Elsey, Jr.
James John Faris
Janet Gail Feldtmose
Edward Lawrence Fell
Nancy Marshall Fennell
Robert James Fetsko
William Kemp Fidler
Joan Elizabeth Fisher
Jane Carroll Florence
William Henry Folger, Jr.
Daniel Davies Foote
Ellen Valworth Foscue
Gail Elizabeth Foster
Michael J. Foster
Ramon Paul Fouse
Frances Prudence Fraley

William Ernest Franklin
Layton W. Franko
Morris Laney Funderburk, Jr.
Flora Lee Fuqua
Nancy Caroline Garland
Sarah Ruth Gaston
Diana Eleanor Gauld
Sharon Marie Gercken
Virginia Anne Gibbons
Patricia Alice Gilligan
Mary Anna Glass
Jack Arthur Gleason
Rochelle Sperling Goldbloom
Herbert Phillip Goldman
Ralph Rust Goldman
Timothy Clarke Goodman
Bennett Walter Goodspeed
Lewis A. Gorham, Jr.
Margaret Camilla Grady
Carroll Douglas Grant
Virginia Banks Grant
Evelyn Drysdale Greason
Edward Graham Green
Stuart Prince Greenspon
Edward Anthony Grimm
Henry Houston Groome, Jr.
Frederick Lee Grover
John Hildt Grubb, Jr.
Marie Theresa Gudger
Martin Chesly Hamilton
Charles Stephen Hankins
Patricia Annora Hansen
Richard Erling Hansen
Margaret Frances Hardwick
Glen Bowers Hardymon
N. Gail Harp
Joyce Anne Harris
Benjamin Samuel Hampton Harris, III
Jacob George Harris
Shannon Harrison
Charles Byram Hartwig
Judith Anne Heckroth
Gwenfred Rusk Heinle
Hugh William Helms
Herbert James Herring, Jr.
Cornelia Dianne Hewitt
Karol Ann Heyse
Carl Ray Hickey
Lou Ella Hicks
Bernice Boyd Hight, Jr.
Zeb Bryan Hill, III
Patricia Ann Hine
Geneva Anne Hines
William S. Hinkle
Henry Durward Hofler
Richard Parker Holleman
Justus Mitchell Holme, Jr.
Elbert Carmack Holmes, Jr.
Edwin C. Holt
Mary Wilson Hook
Alton Hunter Hopkins
Tory Bingham Horton
Norris Leonard Horwitz
Lawrence Truman Hoyle, Jr.
Philip Hamilton Hubbell
Judith Ann Huck
Sarah Harriette Hunter
Frederic Lawrence Hurd
Robert Otis Hurry
Mildred Amburn Huskins
Jean Katherine Ikenberry
Elizabeth Ruth Ingram
Henry Clarence Irvin
Charles Parson Irwin, III
Barbara Lynne Ivey
David Parker Ivey
Lenard E. Jacobson
John Thomas Jenkins
Gerald Arsen Jibilian
Brian Lindland Johnson
Chapman Gordon Johnson, Jr.
Ruth Allyn Johnson
Elizabeth Anne Jones
James M. Jones, Jr.
Jon Stephen Jones
Nancy Annara Jones
Robert Alston Jones
Thomas Alban Jones
Martin Joseph Joyce, Jr.
Herbert Ellis Kann, Jr.
Richard Irving Katz
Linda Louise Keeny
John Matthew Keith, Jr.
Jeanne Alice Kelly
Marcia Jean Kelly
Kathryn Kern
Glenn Elwood Ketner, Jr.
George Austin Kiehle
James Edwin King
Karen Wells King
Caroline Elizabeth Kirkman
Mary Lynn Kirkpatrick
Winifred Elizabeth Kittrell
Bruce Thomas Kloppman
Kathleen Carol Knoch
Hildegard Kopf
Carl Emil Krupp
Kenneth Richard LaBone
Robert Garrett Lane
Gladys Jean Langworthy
W. Greg Lanier
Joseph Richard Lanning
Jean Ann Lanpher
Billie Frances Lassiter
Edward Lee Laughinghouse
Gail Bryan Lazenby
Harold Landis Leaman, Jr.
Eugene Shaner LeBauer
John Daniel Lee, Jr.
Thomas Choy Lee
Jon Francis Leyens
Millard M. Lipman
Daniel Milton Litaker, II
Thomas Franklin Little
Clyde Ronald Locke
Helen Spindler Locke
Marjorie Locke
James Thomas Love, Jr.
Lynda Evans Love
John Fletcher Lovejoy, Jr.
Diane Elizabeth Loy
Gail Karen Lundberg
Andrea V. Lundeberg
Jane Catherine Mack
James Thomas Derek Mackesy
William Bruce MacKinnon
Mary Althea Maddry
Wilma Lee Maki
Thomas Mitchell Maloof
Deborah Manders
Barbara Kay Martin
Harold Harber Martin, Jr.
Joseph Moody Martin
Janice Ann Matthews
Paul Wilson Matthias
Harold Carl Mauney, Jr.
George A. McCammon, Jr.
John Lewis McConchie, Jr.
James Wilson McElhaney
Michael Burnette McGee
Ralph McGraw, Jr.
Diane Rush McIntire
Betsy Ann McKeel
Mary Ann McLaren
Donald Terry McRae
J. Thomas Menaker
James Elliott Messer
Sally Lou Miller
William Eugene Miller, II
Pryor Reynolds Millner, IV
Carolyn Joella Mister
Lynne Elizabeth Mokler
Charles Joseph Montgomery
Carolyn C. Moore
Mary Elizabeth Moore

Richard Ingram Moore
Robert Thompson Moore
Anita Huffman Morris
Anne Carolyn Morris
John De Morris
Sue Brown Morrow
Judith Ann Moses
Charles Terry Munson
Carolyn Murray
Patricia Ann Murray
Barbara Fortune Musselwhite
Marvin Duncan Musselwhite, Jr.
Ann Willett Nash
Martin Alphon Nash
Yvonne Nasser
James Henry Newcome
Bruce Jay Nitsberg
Carol Ann Noggle
Nancy Ann Norby
Barbara Ann North
William Harriss Northrop
William E. O'Connor, Jr.
Guy Leary Odom, Jr.
James Cleatus Owens
Nettie Hane Owings
Robert William Pabst
Walter Donald Padow
Richard Gregory Page, III
Anne Turner Parrott
Susan Paige Parsons
David Freeman Paulson
Jack Baxter Peacock, Jr.
Harry Hall Pearson
Susan Louise Peeler
George Wendell Phillips
Ruth Earlene Poole
Margaret Carlton Pope
Myrna Elizabeth Pope
Ike Garber Powell
Richard Michael Powell
Garrett Power
Thomas Marshall Prather
Charles Edward Preacher
Mary Frances Prentice
Robert Edward Preston
Patricia Vaughn Proctor
Judith Ann Purdy
Allan Scott Quigley
Frances Elizabeth Ragland
Reuben McCorkle Rainey
Barbara Jean Rambin
Carl David Rao
Samuel DuBose Ravenel
Ann Barr Rawlings
Martea Helen Reed
Dorothy Douglass Regan
Walter Arnold Reynolds, III
Mary Elizabeth Rhamstine
Marian Ruth Rice
Nancy Garland Richardson
Carol Ann Rickard
Kay Lovell Riffle
Martha Wriston Rizos
Mayme Modena Roberson
Marion Elizabeth Roberts
Battle Moore Robertson
Isabel Delaplaine Robinson
Vernon Haskins Rochelle
Betty Ann Rogerson
Thurman Johnson Ross, Jr.
Theodore Stuart Royall, Jr.
Frederick Leon Ruben
B. Winfred Ruffner, Jr.
Allen Garfield Rundle
Kurt Berner Rusch
Richard G. Rutishauser
John Hoyle Rutledge, III
Robert Edward Sand
Mary Elizabeth Sanders
Arturo Santo Domingo
Jack Louis Sapolsky
Margaret Ann Sapp
Marian Lenderking Sapp
Susan Jane Saunders
Gladys Anne Scarboro
George Louis Scheper
Karl Peter Schillig
Katharine Leonard Schlag
Terrence Eugene Schultz
Diane Schwartz
Ann Ernestine Schwertfeger
Louis Henry Schwoebel, III
Charles Herbert Scott
S. Alexander Scott, Jr.
Donald Serafin
Elaine Marguerite Sexton
Russell Delbert Shannon
John Loyd Sharpe, Jr.
Kathryn Wagner Sharpe
Ralph McDuffie Sharpe, Jr.
Ralph Nevin Shaver, II
Mary Cowell Shepard
Mary Lee Shideler
Malcolm Kay Shields
Elizabeth Lee Shultz
Alan Silber
Sally Simmons
Carl Geoffrey Simon
Alice Elisabeth Sims
Don Allen Singer
Charles Mallary Singleton
Laura Jean Smith
Roswell Earle Smith, Jr.
Sarah Leuna Smith
Lois Ann Speed
Myrla Dian Spruill
Carol Stanley Spurrier
Howard Robert Stagner
Judith Jane Staley
Jane Alexander Stapleford
Virginia Joan Starr
Julianne Stauffer
Michael Lewis Steer
Benjamin Gerald Stein
Lawrence Webster Stiles
Cynthia Anne Stokes
Mary M. Stolzenbach
Diana Tilley Strange
John Hadley Strange
Sarah Anne Straub
Nathan Philip Strause, III
Paula Straw
Anthony Reid Strickland
Larilee Baty Suiter
Sandra June Sumner
Miriam Anne Swany
James Emory Swofford
Judith Lynn Taylor
Willie Murchison Taylor, Jr.
John Schropp Thaeler
Gilbert Carl Thelen, Jr.
Brian David Thiessen
Anne Brewer Thompson
Rudolf Thunberg
Elizabeth March Timberlake
E. Herbert Tinney, Jr.
Merwin Armel Todd, III
Barry W. Torgesen
Ruth Carolyn Townsend
Janice Mae Trickey
Michael Clark Troy
Virginia Odelle Turlington
James Witcher Turner, Jr.
Robert Wilson Tyndall
Patricia Jane Tyson
Roswell Fairbanks Vaughan, III
Stephen T. Vermillion, II
Thomas Martin Vernon, Jr.
Charles Edward Virgin
Linda Baldwin Visco
Sara Ann Wachter
James Earl Waddell
Judith Louise Walker
Katharine Badger Walker
Emerson Douglas Wall
James Benjamin Wallace

Thomas Malvern Walton
Kenneth Paul Walz
Frederick B. Warburton
Judson Durward Watson, Jr.
Robert Orelious Weaver, Jr.
Cary Nelson Weisiger
Valerie Draper Welsh
Frederick Lee Welther
Janet Lou Welther
Susan Elizabeth Werner
Wanda Allene West
Arthur F. Whetstone
Terry Glidewell Whitaker
Miriam Nickel White
Warren George Wickersham
George Robert Wileman
Jay F. Wilks
Jack Dean Williams
Jean McDougle Willis
Thomas Wilson
Maralyn Winter
Lawrence Eugene Wolfe
David Michael Wood
John Carlyle Wooten
Mary Lu Wright
Nancy Lee Wright
David Jon Yarington
Joan Ellen Young
Joseph Richard Zaientz
Jon Leonard Zoole

B.S. DEGREE

Janet M. Andress
Terry Scott Carlton
Joseph Edward Clayton
Dannie Joe Collins
James Joseph Connelly
Shelley Carter Davis, Jr.
Delta Ann Dieffenbach
Linda Annette Edwards
Phillip Winston Farmer
Claudine Evelyn Fields
W. H. Fisher
Lance Harmon Funderburk
Roderick Daniel Gerwe
Lee Scranton Harris
William Lee Harrison
Robert Gerald Honeycutt
Lyman H. Howe, III
James Stevenson Humphrey, Jr.
Margaret Elizabeth Hundley
John Frederick Klein
Judith Lynn McKay
Robert Lewis McNeely
Robert Franklin Moates
Kay Kincaid Moss
Elizabeth Padgett Murdoch
Jan Kurt Oosting
Laurence Ivan Peterson
E. David Roderick
Warner Curtis Scott
James King Stoops
Anthony Lennon Thebaut
Edward Dennis Theriot, Jr.
John H. Venable, Jr.
Jesse Davis Wellons, III
Phil Whitfield Winchester, Jr.

B.S. DEGREE IN CIVIL ENGINEERING

Edward Rutledge Carr
Charles Edwin Carter
Seth Thomas Cox, Jr.
William Francis Frazier
David Holland Gerdel
Leonard Shaw Graham, Jr.
Edward Wygant Gray, Jr.
James Robert Grube, II
Howard Palmer Haines
Thomas Putnam Hutchinson
George Homer King, Jr.
Walter Albert Konefal, Jr.
Rudolph Wilhelm Oeben
Larry Edward Parsons
George Edward Shank
Gerald Charles Strickland
Robert Michael West
Robert Linford Wooten

B.S. DEGREE IN ELECTRICAL ENGINEERING

Thomas Russell Bazemore, Jr.
Richard Gerald Bowman
William Forrest Chambers
Daniel Jen-Dean Chu
Thaddeus Chandler Cox
Crawford Marshall Dickey
Rix Allen Dieffenbach, Jr.
Fred Paul Fischer, Jr.
Wayne Russell Fox
James Howard Frey
Harmon Thomas Gnuse
Edmund B. Greene
Walter Albert Johnson
Carroll Ellis Jones
Warren Randolph McDonald
James Samuel McKnight
Leland William Miller
Elizabeth Patterson Moore
Allyn Sumner Norton, Jr.
H. Clark Overley
Hugh Omega Porter, Jr.
Leon Harrison Register, Jr.
Jay Henry Schlag
Richard George Schultze
Howard Halley Shockey, Jr.
George Henry Clay Shutt, III
Richard Wilson Slocum
Samuel Scott Stevens
Paul Bert Thomas
Terry Parker Wallace
George Michael Wilkins
Paul Randolph Williams

B.S. DEGREE IN MECHANICAL ENGINEERING

Manuel A. Arrieta
Edgar Coleman Ballowe, Jr.
George Bandré, III
James Newcomb Barton
Jon Richard Blyth
Jack Bletz Bowman, Jr.
Todd Smathers Bradfield
Robert Fred Bradley
Frank Douglas Canney
William Albert Carswell, Jr.
Carl Ray Caudle
Edwin Ernest Chapman, Jr.
Worth Bagley Cotton
Roger Duane Crum
Richard Peck Dale
John Parker Decker
Donald Hemphill Denton, Jr.
David Donald Drummond, Jr.
Allen Edward Duval
Christopher Buhrman Espy

David Lynn Friday
Erskine Lee Harkey, Jr.
Arthur R. Henry, Jr.
Jerry Wayne Hillard
Elliott Phesanton Hinely
Richard Lawrence Holland
Gerald Carlisle Huggin
Alan L. Kaganov
Earl Carlton Koontz
Thomas Kayes Lambert
Robert Stephens Longdon
Daniel Edward McConnell
Jan Lee Mize
Aristotle Theodore Nicolaides
William Martyn Poe
John Bowen Ross, Jr.
Philip Cox Smith
David Boyce Stattenfield
Laurence Alan Stephens
Robert Archer Swanson
Robert F. Wayand
Morris Clinton Weisner
David Hugh Wyrick

B.S. DEGREE IN NURSING

Sally Ann Bender Addison
Carolyn Anne Berry Allison
Lola Lee Anderson
Deanna Claire Barber
Sherry Lynn Billard
Margaret Louise Borcherdt
Beverly Ann Bowser
Lee Ann Brown
Carol Linn Butcher
Lynne Williams Cole
Katherine Anne Engel
Mary Adele Fink
Shirley Fabian Flynn
Carol Elizabeth Green
Katherine P. Groff
Judith A. Grybowski
Patricia Lee Hatch
Rebekah Starling Hill
Dorothy Ann Horton
Marcia Jane Hruby
Barbara Ann Hudak
Elizabeth Dorsey Ivey
Marla Lee Jordon
Johnny Jane Joyner
Martha Jane Lee
Elizabeth Ruth Losaw
Linda Jane Lusk
Margaret Ann McCallum
Corley McDonald McCormack
Jean Peyton McDonald
Helen Demarest McTammany
Elizabeth Ann Marston
Kathryn Beryl Mason
Nancy Joan Miller
Audrey L. Morgan
Christine Anne Penney
Edna Bryan Quinn
Judith Burt Saunders
Kay Lynn Schubkegel
Gladys Ruth Shorrock
Betsy May Terry
Elizabeth Whitley
Charlotte Jean Wilbur Williams
Florence Jane Wilson
Gayle Seidel Wisler

B.S. DEGREE IN MEDICINE

Victor Simon Constantine
Charles Bessellieu Hammond
Walter Tuck Parkerson
Richard Leon Riley
John Holland Sadler
Joseph Edwards Walker

M.S. DEGREE IN NURSING

Marcia Caroline Black
Joan Claudette Brown
Elinor Brooks Caddell
JoAnn Baughan Dalton
Rebecca Ridgely Hill
Carol Clarke Hogue
Shirley Davis Martin
JoAnne Chavis Mitchell

M.S. DEGREE

Gale Herbert Buzzard II
Charles Harper Carr
Agustin Diaz
Henry Nathaniel Dorris
Hsueh-chien Fu
Theo C. Pilkington

A.M. DEGREE IN TEACHING

Sieger Herr Canney
Mary Gabbert
Norman David Haar
Margaret Hunt
Sylvia S. Kerckhoff
Hazel Matthews
Nilah Phoebe Meier
Robert Stanley Moore
Jimmie Ray Suttle

M.R.E. DEGREE

Daniel Castillo Arichea, Jr.
Lavina Carol Ashby
Harriet Estelle Chewning
Margaret Jean Parham Gandy
Thor Hall
Marguerite Constance Hogue
Betty McCoy Vaughan

M.ED. DEGREE

Rufus Knott Braxton
Laura Jessica DiLeo
Herman Cloyd Hollander
Polhill Smith Koenig
Ralph Raymond Napp
Emilie Sandra Smith

M.F. DEGREE

Harold Lee Beamer
David Glenn Benedict
William Culbreath Bodie
Franklin Thomson Bonner
Richard Sidney Boone
James Joseph Connor
Mark Lofland Davis, II
George Fewell Dutrow
Thomas Bedford French
George Philip Fritz
William Lee Harrison
Walter Andrew Hough
Clifford Page Judy
Albert James Kayll
James Nallen Kochenderfer
Don Lee Kulow
Richard Leroy Morgan, Jr.
George Bruce Moyers
Jack David Rogers
A. Jay Schultz
S. Ronald Singer
Jake Massie Stone
Kenneth John Swisher
Richard Willard Tinus
Joseph Edward Vaughn
Ralph Steele Weaver, II
Nelson Paige Will

A.M. DEGREE

Judith Anne Bailey
Elsie Ervin Bock
James Shepherd Bolen
Sea Bong Chang
Alisone M. Clarke
Eugene Carson Crawford, Jr.
John Monroe Cunningham, Jr.
Carter Anderson Daniel
Stephen Herbert Davis
Tyler Deierhoi
Roderick Bruce Dugliss
Phoebe Beckner Estes
Gordon Esley Finnie
Nancy Turnbull Fletcher
Ellis Wing Hollon, Jr.
John David Huss
Alice Joyner Irby
Everette Keith Johnson
Mary Stewart Johnstone
Noel Wiley Keys
John William Kilgore
Chun Su Kim
John Laurence Knapp
Norman Edward Kowal
Abraham D. Kriegel
Alvin M. Lewis
Pac-Soong Lou
Edwin S. Mack
Merrill Ann Maguire
Jack McMichael Martin
Arthur McA. Miller
Don Curtis Miller
Andrew Johnson Milnor
Katharine Fatio Moore
Robert Whittelsey Morgan
Ted Daniel Murphy
Henry Powell Porter, Jr.
Virginia Woodruff Price
Kitty Chamberlin Hyatt Radford
Winslow Rodeck Remley
Anant Sanguannam
Lee Baldwin Sayre
Barbara Anne Smith
Marilyn Leanne Stagner
Clarence Nathan Stone
Mary Niemi Stone
Arthur Vega, Jr.
Lucia Adelaide Walton
Wallace Steadman Watson
Thomas Howard Webb, Jr.
Ann Marie Welch
Robert Ford Welsh
Richard Barry Westin
William Hayes Williams

B.D. DEGREE

Gayle Thomas Alexander
William E. Amon
James H. Bailey
Chancie DeShield Barclift
Robert S. Barnes
Paul Merritt Bassett
Coy Bovender
Giles Oren Bowman
Orman Richard Bowyer
Lester Gale Brady
Rodney Cain Brown
Morris Jennings Byers
William Paul Carlson
Robert Brown Claytor
Emmett Winbern Cocke, Jr.
William Benjamin Day, Jr.
William Wearshing Erbach
Arnold Gayle Ford
Merle Francis Frank
Robert Herbert Gibbons, Jr.
George Henry Gravitt
Dayle Gregory Groh
James Russell Hailey
Terry Lingle Hammill
Oros Leo Hancock
Donald Kirk Hanks
Howard Lee Harrod
Douglas Tripp Holden
Meritt Conrad Holmes
William Raymond Jennings
Robert Ted Jones
John Sharpe Jordan
Frank Wade Kiker, Jr.
Ashby Louis Lazenby
Eugene Thomas Long
Peleg Dameron Midgett, III
John Leon Newton
Gene Austin Norris
Edward Powell Osteen
Herbert Talmadge Penry, Jr.
Merrill Perkins
Orville Howard Ripley, Jr.
David Byrl Schadt
Charles Richard Scott
William Gray Sharpe, IV
James Cooper Singleton
Charles Edgar Sparks
Paul Bernard Sparrer
James Carlton Stanford
Robert Francis Streetman
Raymond Clifton Summey
Woodrow Edward Walton
William Hunt Watson
William Osborne Webster
James Lee Rue Wesley
Howard Ray Wilkinson
Charles Garland Young
Robert Terry Young

LL.B. DEGREE

John Quincy Beard
Robert Barnard Bell
Barstow Brownson
James E. Buck
Richard Eugene Cooley
Don Ross Craft

Robert C. Crawford
Richard Robert Crooke
Herbert Owen Davis
Wiley J. P. Earnhardt, Jr.
Donald Kenneth Easterly
Stanley Ethan Faye
Edward Peel Hardin
Rufus Sadler Hill, Jr.
Joel Ibert Keiler
Charles David Lundquist
Nicholas Alexander Lyras
William Sartor McLean
Robert Denkmann Marshall, Jr.
Robert D. Meenen
Richard C. Otter
Ronald Lawrence Palmer
Joseph Martin Parker, Jr.
Wade Hampton Penny, Jr.
Jay Thomas Rouland
Robert Wendell Rudas
John Ross Seltzer
William Rudolph Shebey
Allen George Siegel
John Crispin Soich
Marinos Thomas Svolos
Maynard F. Swanson, Jr.
Newton Campbell Taylor
Edward Thornhill III
George Hunter Warlick
Richard Ray Weidman

LL.M. DEGREE

Gerald Robert Gibbons
Marvin M. Moore

M.D. DEGREE

Winnifred Allen Addison
Linny Marshall Baker
Robert Estes Blount, Jr.
Preston Hatcher Bradshaw, Jr.
Robert Samuel Brice, Jr.
Burton Erwin Brownstein
George Brumley, Jr.
Henry Simon Campell
Mrs. Ruth Flinn Harrell Capp
Joseph Samuel Cassells
Hubert Royster Chamblee, Jr.
William Stuart Collins
William Cornelius Cooper, Jr.
George Richard Cousar, Jr.
Paul Calvin Cronce
James Elbert Crymes, III
Franklin Palmer Dalton
James Karnes Davis
John Lambert Denby
Charles Edward Dobbs
Peter Marc Duvoisin
Perry Huggin Dyke
Peter Cummins Dyke
Mary Elaine Eyster
Robert Wallace Fischer
William Whately Fore
Lynn Fort, III
Edgardo Arturo García
Edward Michael Gerber
George Browne Goode, Jr.
Robert Green
Harvey Eliot Grode
William Henry Hubbard
Edmund Joseph LeBauer
James Fletcher Lee
John Gary Lodmell
John Hugh Malone, Jr.
Francis Stanford Massie
Walter Brem Mayer, Jr.
Alexander Canaday McLeod
Michael Eugene McLeod
David Knight Meriney
Robert Alston Merrell, Jr.
John Linford Opdyke, Jr.
Patrick Jerome O'Shaughnessy
Walter Tuck Parkerson
Lawrence Huitt Parrott
Philip Henderson Pearce
James Phillips Pilliod
Robert Sigurd Porro
Edwin Thornton Preston
Grady Edwin Price
Richard Lee Reece
John Martin Reed
Charles Clifton Richardson
Richard Stafford Riggins
Bernard Allen Rineberg
Lloyd Harvey Robertson, Jr.
John Holland Sadler
Emile Michael Scarpelli
George Carl Schwarz
James Congdon Seabury, Jr.
Allen Shalit
Donald Dewey Smith
Edward Hardin Smith, Jr.
Frank Allan Stuart, III
Harry Thurman Tully, Jr.
Joseph Edwards Walker
Lawrence Crumpler Walker, Jr.
Carl Harold Weber, Jr.
Harry Lake Westfall, Jr.
William Weston, III
Stanley Ivan Worton
James Sanford Young

ED.D. DEGREE

David Sanford Barkley
Charles Bracken
Lloyd Gilbert Carroll
John Morgan Flowers
William Robert Insko
Franklin Ross Jones
Millard Vance Sales

D.F. DEGREE

Desmond Sidney Jackson
Charles Eugene McGee

PH.D. DEGREE

David Lee Arenberg
Robert Sheeran Benton
Philip Raymond Bevington
Irene H. Butter
James Harve DeLap
William Rexford Dunnavant
Wayne Orien Evans
Thomas Carlos Flick
Hugh Wilds Folk
Regina Frayser
Donald Koperlik Freedheim
John Morton Goodkind

Gilbert Gottlieb
John Frederick Haberer
Fritz Walter Hofmann
Norman Eugene Hoyle
John David Imsande
Thomas Norman Johnsen, Jr.
John Newell Kidder
James Ray Kirby
Richard Allen LaBarge
Robert Dorn Langston
Ann Lodge
Robert Meredith MacLeod
George Kendall Manlove
Harry Berst Mark, Jr.
Carl Martin Meltzer
Harold Alfred Mooney
Francis Walter Patten
Grover Starr Paulett
Robert William Powell, Jr.
Charles Lloyd Reid
Carl Rothschild
Wilfred Borden Schofield
Robert J. Schramm, Jr.
Richard Hoxie Severens
Michael Francis Shugrue
Marvin Kenneth Singleton
Harlan R. Stevens
Thomas Bernard Stim
Lawrence Wilson Weston
James Floyd White
Nancy Dolly Wolfson
William Riley Wilson

COMMISSIONS IN THE UNITED STATES NAVY AND UNITED STATES MARINE CORPS

Ensign, United States Navy, NROTC

George Bandré, III
Jack Bletz Bowman, Jr.
Stephen Huntley Casey
Thaddeus Chandler Cox
John Parker Decker
Rix Allen Dieffenbach, Jr.
William King Drummond
William Francis Frazier
Carroll Douglas Grant
Erskine Lee Harkey, Jr.
William Lee Harrison
Bernice Boyd Hight, Jr.
Elliott Phesanton Hinely
Edwin Creech Holt
Carroll Ellis Jones
George Homer King, Jr.
James Edwin King
Robert Stephens Longdon
Betsy Ann McKeel
James Elliott Messer
Leland William Miller
Richard Gregory Page, III
Allen Garfield Rundle
Richard George Schultze
Shuping Alexander Scott, Jr.
Laurence Alan Stephens
Judson Durward Watson, Jr.
Lawrence Eugene Wolfe

Second Lieutenant, United States Marine Corps, NROTC

Walter Eugene Boomer
Howard P. Haines
Lawrence Truman Hoyle, Jr.
Gerald Carlisle Huggin
Frederic Lawrence Hurd
Thomas Franklin Little
Robert William Pabst
Anthony Reid Strickland
James E. Swofford
Terry P. Wallace
Cary Nelson Weisiger
George Michael Wilkins
Paul Randolph Williams

COMMISSION OF SECOND LIEUTENANT, UNITED STATES AIR FORCE

Richard Gerald Bowman
William Waring Boys
Frank Douglas Canney
Fred Paul Fischer, Jr.
David Lynn Friday
Harmon Thomas Gnuse
Henry Clarence Irvin
Kenneth Richard LaBone
Warren Randolph McDonald
Rudolph Wilhelm Oeben
William Martyn Poe
Richard George Rutishauser
Carl Geoffrey Simon
Richard Wilson Slocum
Brian David Thiessen

DEGREES AWARDED SEPTEMBER 1, 1959

A.B. DEGREE

Lota Leigh Brian
John Harold Coffey, Jr.
Joseph Willette Dowless
Angier St. George Biddle Duke
Helen Arendell Ellington
Roger Larison Embley
Frank Utley Fletcher, Jr.
Vinton Earl Fountain, Jr.
Perry E. Gary, Jr.
James Harrison Gatrell, IV
Beverly Gaines Goodman
John Erich Hansen
Ellen Patricia Harris
Ronald Austin Haynes
Patricia Crain Jarman
William Edward Johnston
John O. Jones
Johnie Leroy Joyce, Jr.
Peter Ernest Kautz
Ann English Kearns
James R. Keyser, III
William Paterson Luce
Peter Lyon
Robin Lyons
Horace Haverstick Martin, III
Cheston Vaux Mottershead, Jr.
Christopher Columbus Mulholland, III
John Gordon Noakes
Anne Priddy Olsen
Gary Charles Rauch
Rhodney Bailey Reade, Jr.
Hal McLean Redwine
Floyd Daniel Sawyer
Harry R. Sellers, Jr.
William Robinson Simpson, III
John Shaffner Slye
Enoch Lafayette Stamey, III
Charlene Beth Sterba
Mary Mosteller Stuckey
Donald Edward Teller
Robert Kirk Thompson, Jr.

Margaret Dorcas Tyndall
Ruth Irene Whitley
Sue Wolfson Whitney
Sylvia Williams
Gaylord Ashlyn Wood, Jr.
William Wyman Yelton
Sara Lewis Young

B.S. DEGREE

John Hutcheson Embry
William Morris Long
Sarah Myers Russell
Herman Edward Schieke, Jr.

B.S. DEGREE IN NURSING EDUCATION

Margaret Arnett Elkin

B.S. DEGREE IN MECHANICAL ENGINEERING

Henry Rust

B.S. DEGREE IN NURSING

Jeannette Buhler
Elizabeth Ann Cannon
Gloria Meyer White

M.S. DEGREE

Jehangir Farhad Mirza

A.M. DEGREE IN TEACHING

James Edward Bartal
Percy L. Bernstein
Clarence Evans Boyd
William Arthur Cockell
Harold Joseph Cohen
John Brazelton Fillmore Dice
Thomas I. Edgar
Leonard F. Freiburghouse
Marydale Marsh Gray
Nancy Hildebrand
Phyllis Daphene Rankin Lintz
Jesse Samuel McClure
Jo Anne McLawhorn
Sue Brevard Morris
John Jordan Morrow
Vincent Luis Rodriguez
Emery Roughton
Wesley Ryals
Gail Joyce Schoenborn
Sarah Searcy
Evelyn Louise Smith
Webster Zeeland Smith
Frederick G. Stritzinger, IV
Stephen Noel Tackney
Joyce Funkhouser Wasdell
Katherine Anne Wenger

M.ED. DEGREE

Donald Douglas Abernethy
Romaine Barnes
Helen Moore Britton
Betty Cathey Brunson
Louise Sullivan Cooper
Mabel Eakes Elliott
William Elmore
Wilbur Jacob Gobrecht
Sarah Anne Hollar
Mary Frances McSwain
Mary Gail Mossor
Martha Anne Owen
Fallie Doris Page
Dorothy Evelyn Schmidt
Austin Joseph Simpson
Elizabeth Sorrell Thompson
Elinor Lucie Tuckwiller

M.F. DEGREE

Daniel Eugene Chappelle
William Henry Osgood

A.M. DEGREE

Edward Paul Berger
Craven Allen Burris
Graciela C. Candelas
Mary Martin Davis
Jean Dickinson Gibbons
Julian Ravenel Harrison, III
Christopher Henry Horsfield
Mary Ellen Jones
Robert Shields McIlwaine
Jane Stroud Mellon
William Jerome Mitchell
John Andrew Morgan, Jr.
Francean Gloria Napoli
Norman laCour Olsen, Jr.
Robert Vickers Shaver
Kenneth Judson Smith, Jr.
Phyllis Ann Stanbarger
Samuel Augustus Syme, Jr.
Frederick Randolph Vaughan

DOCTOR OF MEDICINE

Irwin M. Freundlich
Henry Bernhard Freye

ED.D. DEGREE

Roman Romeo B. Calica, Jr.

PH.D. DEGREE

Charles Miller Butter
Mary Eleanor Craig
Richard Marshall Dunham
James Charles Finlay, S. J.
Fred Monroe Gottheil
Louis Frederick Hass
William Henry Nelles Hull
Victor Hobbs Hutchison
Kyozi Kawasaki
Saul Michael Levin
Eugene J. M. Lynch
Moses Stephen Mahaley, Jr.
David Royal Moorefield
P. S. K. Murty
William B. Novoa
Rena Josephine Ratte
Philip Bruce Secor
Harold John Schultz
John David Taylor
Joseph Wells
William Rowland Wisseman

HONORS AND PRIZES

Summa cum laude

JUNE 6, 1960

Terry Scott Carlton
Harmon Thomas Gnuse
Cynthia Anne Stokes
Hildegard Kopf
Joan Marie Durstine
Rudolf Thunberg
James Robert Brown
Warren George Wickersham
Jan Lee Mize
Mary M. Stolzenbach
Elliott Phesanton Hinely

Magna cum laude

JUNE 6, 1960

Robert Lewis McNeely
Robert Doyle Anderson
Gail Bryan Lazenby
Rae Fruth Allen
Lou Ella Hicks
Lena Margaret Bradley
Gilbert Carl Thelen, Jr.
Ellen Valworth Foscue
John Matthew Keith, Jr.
Diane Elizabeth Loy
Barbara Jean Rambin
Gail Elizabeth Foster
Lee Frances Day
William Lowell Campbell
Richard Louis Cohen
Anne Brewer Thompson
Thomas Martin Vernon, Jr.
Sarah Harriette Hunter
William Forrest Chambers
Jon Christopher Crocker
Frederick Franck Andrews
Julianne Stauffer

HONORS IN DEPARTMENTS AND SCHOOLS

DEPARTMENTAL GRADUATIONS WITH DISTINCTION

Chemistry

Terry S. Carlton
Claudine E. Fields
J. S. Humphrey
Robert L. McNeely

Economics and Business Administration

Julie L. Campbell
Rudolf Thunberg
Mary L. Shideler
Rae F. Allen
Martha W. Rizos

Civil Engineering

James Robert Grube

Electrical Engineering

William Forrest Chambers
Daniel Jen-Dean Chu
Wayne Russell Fox
Harmon Thomas Gnuse
Harry Clark Overley
Samuel Scott Stevens

English

Joan Marie Durstine
Ellen Foscue
Jane Catherine Mack
Mary Elizabeth Moore
George Louis Scheper

History

Norris Horwitz
John M. Keith, Jr.
Malcolm Y. Shields
Cynthia A. Stokes

Philosophy

Michael Foster
Gail Lundberg

Physics

Warner C. Scott

Political Science

Esther Alfriend
Carol Corder
Marcia Dunning
Herbert J. Herring, Jr.
John H. Strange

Psychology

Janet Gail Feldtmose
Lou Ella Hicks

Religion

Alice Elizabeth Sims
Lois Speed

Air Science

Fred Paul Fischer, Jr.
Harmon Thomas Gnuse
Warren Randolph McDonald

COLLEGE OF ENGINEERING

Elections to Tau Beta Pi

Manuel Antonio Arrieta
Jon Richard Blyth
William Forrest Chambers
Daniel Jen-Dean Chu
Worth Bagley Cotton, Jr.
Wayne Russell Fox
Harmon Thomas Gnuse
James Robert Grube
Elliott Phesanton Hinely
Carroll Ellis Jones
Robert Stephens Longdon
James Samuel McKnight
Jan Lee Mize
Harry Clark Overley
Philip Cox Smith
Samuel Scott Stevens
Robert Archer Swanson

SCHOOL OF LAW

Elections to the Order of the Coif

George Hunter Warlick
Allen George Siegel

Graduated With Distinction

George Hunter Warlick
Allen George Siegel

SCHOOL OF MEDICINE

Elections to Alpha Omega Alpha, Honorary Medical Fraternity

Linny Marshall Baker
Henry Simon Campell
William Cornelius Cooper, Jr.
Paul Calvin Cronce
Mary Elaine Eyster
Harvey Eliot Grode
James Fletcher Lee
Michael Eugene McLeod
John Linford Opdyke, Jr.
John Martin Reed
Charles Clifton Richardson

SPECIAL HONORS AND PRIZES

The Robert E. Lee Prize
Richard Irving Katz

Willis Smith Prize
George Hunter Warlick

Milmow Prize
Allyn Sumner Norton, Jr.

The George Sherrerd III Memorial Award
Harmon Thomas Gnuse

North Carolina Association of Certified Public Accountants Award
Rae Fruth Allen

Algernon Sidney Sullivan Awards
Bernice Boyd Hight, Jr.
Mary Althea Maddry

The Florence Nightingale Alumnae Plaque
Johnny Jane Joyner

C. V. Mosby Awards
Linny Marshall Baker
Paul Calvin Cronce
Mary Elaine Eyster
James Fletcher Lee
Michael Eugene McLeod

Alpha Kappa Psi Medallion
Rudolf Thunberg

Borden Undergraduate Research Award in Medicine
John Holland Sadler

American Academy of Dental Medicine Award
Richard Stafford Riggins

Merck Manual Awards
Linny Marshall Baker
Michael Eugene McLeod

Trent Prize in the History of Medicine
Richard Lee Reece

The William T. Laprade Prize in History
Cynthia Anne Stokes

Merck Index Awards
Terry Scott Carlton
James Robert Brown

Pegram Chemistry Club Prize
Terry Scott Carlton

The Moseley Award
Katherine Anne Engel

Hamilton Award
Jon Richard Blyth

WOMAN'S COLLEGE

FRESHMAN HONORS

Students listed according to average

Helen E. Gwynn
Lois L. Wiederschall
Joanne F. Kroll
Lynne M. Vogel
Barbara M. Brooke
Margaret A. Matrone
Margaret C. Rouse
Lucia B. Brunn
Nancy L. Lassiter
Patti G. Sawyer
Patricia A. Hagbom
Marilyn S. Blackwood

Martha F. Warn
Mary Ann Lea
Margaret E. Yoder
Ann G. Barbour
Doris Ann Wright
Linda Kay Wall
Elizabeth A. Welter
Patricia Willis
Carol Ann Woodard
Nancy Anne Pell

SOPHOMORE HONORS

Susan Barbara Letzler
Donna Frances McNabb
Deborah Burnham
Sandra Dee Crotts
Helen L. Midgett
Susan Gayle Bennett
Bettie Kent Paylor
Susan G. Fortenbaugh
Carol Anne Lamb
Dawn L. Stuart
Mary Ann Bryant
Jane Carol Bowness
Carol-Lee Hurley
Anne Phyllis Tyler
Barbara Doty Hess
Joan S. Dimpfl
Mary Ann McLeod
Kathleen A. Patterson
Karen Lynne Conklin
Margaret Ann Harrell

JUNIOR HONORS

Harriet Joan Naviasky
Katherine E. Yonkers
Norma Sue Barnes
Carol Elizabeth Ellis
Sarah Jane Bennett
Martha Alice Tovell
Irmgard M. Keeler
Ruth Ann Edwards
Jane Carolyn Church
Judith Ann Van Ausdall
Ann Denny Clark
Karen Ellen Faber
Elizabeth Marie Giavani
Jean Ogburn
Ruth Graham Shaw
Barbara Blair Underwood
Ine Nijhuis
Eleanor Marie Cutri
Judith Adelaide Kellett
Laura Hermine Turner
Barbara Ann Black
Sandra Leona Stewart
Janet Marie Jordan
Katherine Louise Dixon
Janet Alice Godfrey
Katharine Virginia Hoyt
Susan Victoria Hull
Carolyn Bettz Taylor
Elizabeth Walton Wilson

TRINITY COLLEGE

FRESHMAN HONORS

Students listed according to average

David Lincoln Fisher
James Leland Kennedy, Jr.
Robert Chapman Newman
Jerold A. Fink
Donald Jay Levit
Charles W. Crain
James M. White
Hebert R. Perez
Dabney W. Townsend, Jr.
Paul C. Young
George D. Bittner
Hines H. Hall, III
William T. Woodard, Jr.
Robert A. Wilson, Jr.
Hugh H. Mills, Jr.
Joel Grossman
Charles E. Hill
Jack Ghormley Siler
Richard Everett Appen
Joe D. Bellamy

SOPHOMORE HONORS

Walter A. Scarborough, Jr.
Lonnie O. Grigsby
Norman G. Barrier
Gary Hamilton Lunsford
Leonard J. Comess
Neal W. Knight, Jr.
James Cobb Mills, Jr.
Jerome Alec Pieh
John August Cronquist
Elliott W. Hardin, Jr.
Robert Bagwell Frey
Sanford Victor Levinson
Willard C. Pierson, Jr.
William H. Hallidy, Jr.
Kenneth Gerard Brown
Michael Edward Greene
A. Morris Williams, Jr.

JUNIOR HONORS

James Curtis Ellsasser
John Derrickson McCurdy
Frederick H. Reeser, Jr.
John Eugene Sheats
Terry Gray Pridgen
Robert Stuart Tate, Jr.
Wallace V. Kaufman
Myron Osborn Lounsbury
John Bradbury Reed
John Edwin Knodel
Charles Bartlett Walls
Frank Lawrence Warner
John Andrew Koskinen
Richard P. Heitzenrater
Charles Lee Glass
Lewis C. Craig
Mark Brownlow Edwards
Fred D. Chappell
Robert Mead Maxon

College of Engineering

Freshman Honors

Students listed according to average

Travis C. Broesche

Sophomore Honors

Francis Edgar Walker, Jr.
Charles William Rose
Robert Jay Maxson
Douglas McCall Chapin

Junior Honors

James Newman Walpole
Bruce Patrick Ickes
Robert Allen Garda
Albert S. Daughtridge, Jr.
Ronald Earl Busch
Daniel Mason Brown
John Boyd Whitsett
Donald Hemphill Denton, Jr.

Summary

Government, Administration, and Instruction

The University Trustees		36
Trustees Emeriti		5
Emeriti		49
General Administration		8
Instructional Staff		747*
Professors	200	
Associate Professors	161	
Assistant Professors	146	
Associates	51	
Lecturers	5	
Instructors	88	
Part-time Instructors and Graduate Tutors	60	
Visiting Professors and Lecturers	34	
Directors of Departments	2	
Educational Administration		14†
Business Administration		17‡
Public Relations and Alumni Affairs		16§
Student Life		16**
Office of the President		1
Other Officers		46††
Duke University Press	3	
Music and Art	4	
Physical Education, Trinity College	10	
House Counselors, Woman's College	10	
Food Services	14	
The University Stores	5	
The University Libraries		74‡‡
Total		1029§§

* Does not include two officers with academic rank listed with the General Administration.

† Does not include two officers with academic rank listed with the General Administration and 23 officers with academic rank listed with the Instructional Staff.

‡ Does not include 3 officers listed with the General Administration and one officer with academic rank listed with the Instructional Staff.

§ Does not include one officer listed with the General Administration.

** Does not include one officer listed with the General Administration, 8 officers with academic rank listed with the Instructional Staff, and 3 officers listed with the Educational Administration.

†† Does not include 22 officers with academic rank listed with the Instructional Staff.

‡‡ Does not include 4 officers with academic rank listed with the Instructional Staff.

§§ Does not include duplications. An officer is counted in the first category in which his name appears.

ENROLLMENT ON THE SEMESTER BASIS—1959-60

School or College	*Fall Semester 1959*	*Spring Semester 1960*
TRINITY COLLEGE		
Regular Students	1,848	1,818
Special Students	31	33
Total	1,879	1,851
COLLEGE OF ENGINEERING		
Regular Students	508	467
Special Students	6	7
Total	514	474
WOMAN'S COLLEGE		
Regular Students	1,195	1,141
Special Students	37	45
Total	1,232	1,186
DIVINITY SCHOOL		
Regular Students	242	229
Special Students	5	8
Total	247	237
SCHOOL OF FORESTRY		
Regular Students	53	50
Special Students	2	3
Total	55	53
SCHOOL OF LAW		
Regular Students	175	168
Special Students	7	4
Total	182	172
GRADUATE SCHOOL OF ARTS AND SCIENCES		
Regular Students	550	502
Special Students	152	182
Total	702	684
SCHOOL OF NURSING		
Regular Students	276	263
Special Students	33	22
Total	309	285
TOTAL ENROLLED ON SEMESTER BASIS		
Regular Students	4,847	4,638
Special Students	273	304
Total	5,120	4,942

ENROLLMENT ON THE QUARTER BASIS—1959-60

Medical School	Summer Session 1959	First Quarter 1959	Second Quarter 1959	Third Quarter 1960	Fourth Quarter 1960
Regular Students	70	301	304	292	277
Fellows	45	45	45	45	45
Interns	73	73	73	73	73
Residents	24	24	24	24	24
Assistant Residents ...	149	149	149	149	149
TOTAL ENROLLED ON QUARTER BASIS	361	592	595	583	568

MISCELLANEOUS TERMS

Course	Number of Students	Length of Term	Beginning of Term
Anesthesiology	8	12 & 18 mos.	Registration January
Dietetics	7	12 months	Registration September
Hospital Administration	8	24 months	Registration Jan. & July
Master of Science in Nursing ..	8	12 months	Registration September
Medical Technology	4	12 months	Registration February & September
Pharmacy Intern	2	12 months	Registration June
Physical Therapy	9	15 months	Registration September
X-Ray Technology	6	24 months	Registration September

SUMMARY: FALL AND SPRING ENROLLMENT—1959-60

Fall Enrollment	5,712
Spring Enrollment	5,525

SUMMER ENROLLMENT

	Term I	Term II	July
Regular Students	1,380	1,090	
Mycology			10

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